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Configuring APPN Services

NORTEL NETWORKS™

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Preface

This guide describes Advanced Peer-to-Peer Networking (APPN) services and what you do to start and customize APPN services on a Nortel Networks™ router.

Before You Begin

Before using this guide, you must complete the following procedures. For a new router:

- Install the router (see the installation guide that came with your router).
- Connect the router to the network and create a pilot configuration file (see *Quick-Starting Routers*, *Configuring BayStack Remote Access*, or *Connecting ASN Routers to a Network)*.

Make sure that you are running the latest version of Nortel Networks BayRS™ and Site Manager software. For information about upgrading BayRS and Site Manager, see the upgrading guide for your version of BayRS.

Text Conventions

This guide uses the following text conventions:

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: If the command syntax is: **ping** <*ip_address*>, you enter: **ping 192.32.10.12**
bold text	Indicates command names and options and text that you need to enter. Example: Enter **show ip** {**alerts** | **routes**}. Example: Use the **dinfo** command.
braces ({ })	Indicate required elements in syntax descriptions where there is more than one option. You must choose only one of the options. Do not type the braces when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you must enter either: **show ip alerts** or **show ip routes**, but not both.
brackets ([ ])	Indicate optional elements in syntax descriptions. Do not type the brackets when entering the command. Example: If the command syntax is: **show ip interfaces** [**-alerts**], you can enter either: **show ip interfaces** or **show ip interfaces -alerts**.
ellipsis points (. . .)	Indicate that you repeat the last element of the command as needed. Example: If the command syntax is: **ethernet/2/1** [<*parameter*> <*value*>] **. . .** , you enter **ethernet/2/1** and as many parameter-value pairs as needed.

italic text	Indicates new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is: **show at** <*valid_route*> *valid_route* is one variable and you substitute one value for it.
`screen text`	Indicates system output, for example, prompts and system messages. Example: `Set Trap Monitor Filters`
separator (>)	Shows menu paths. Example: Protocols > IP identifies the IP option on the Protocols menu.
vertical line (|)	Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you enter either: **show ip alerts** or **show ip routes**, but not both.

Acronyms

This guide uses the following acronyms:

ANR	Automatic Network Routing
APPN	Advanced Peer-to-Peer Networking
BrNN	branch network node
COS	class of service
CP	control point
DLC	data link control
DLCI	data link connection identifier

DLUR	dependent logical unit requester
DLUS	dependent logical unit server
DS	directory services
DSPU	downstream physical unit
EN	end node
EP	entry point
FDDI	Fiber Distributed Data Interface
FQPCID	fully qualified procedure correlation identifier
GDS	general data stream
HPR	high-performance routing
ISR	intermediate session routing
LAN	local area network
LANE	local area network emulation
LEN	low-entry networking
LLC	logical link control
LU	logical unit
MAC	media access control
MDS	multiple domain support
MIB	management information base
MSB	most significant byte
NN	network node
NNS	network node server
PCID	procedure correlation identifier
PPP	Point-to-Point Protocol
PU	physical unit
RSCV	route selection control vector
RTP	Rapid Transport Protocol
SAP	service access point
SATF	shared access transport facility

SDLC	Synchronous Data Link Control
SMDS	Switched Multimegabit Data Service
SNA	Systems Network Architecture
SRB	source routing bridge
SSCP	system services control point
TG	transmission group
TPF	transmission priority field
VRN	virtual routing node
VTAM	virtual telecommunications access method
WAN	wide area network
XID	exchange identification

Related Publications

For more information about APPN, IBM SNA, and related subjects, refer to the following IBM publications:

- *IBM Systems Network Architecture: LU6.2 Reference: Peer Protocols* (SC31-6808)
- *IBM Systems Network Architecture: APPN Architecture Reference* (SC30-3422)
- *IBM Systems Network Architecture: Management Services* (SC30-3346)
- *IBM APPN Architecture and Product Implementation Tutorial* (GG24-3669)
- *IBM AS/400 Advanced Peer-to-Peer Networking* (GG24-3287)
- *IBM Systems Network Architecture: Technical Overview* (GC30-3073)
- *IBM Systems Network Architecture: Concepts and Products* (GC30-3072)
- *IBM System Network Architecture: Introduction to Sessions between Logical Units* (GC20-1869)

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Chapter 1
Advanced Peer-to-Peer Networking Overview

This chapter includes the following information about IBM Advanced Peer-to-Peer Networking (APPN):

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Dependent Logical Unit Requester and Server	1-7
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APPN Services	1-21

Review this chapter if you are responsible for configuring APPN on Nortel Networks routers in your network. If you are already familiar with APPN concepts, go directly to Chapter 2 for information on starting APPN on a router.

APPN Networking

APPN is an architectural extension of IBM Systems Network Architecture (SNA). As participants in an SNA network, APPN nodes use distributed network services for dynamic routing, connection, topology, and directory information, simplifying network definition and maintenance.

Nortel Networks routers participate as APPN network nodes in IBM SNA network environments (with or without the presence of an IBM mainframe computer) and communicate with adjacent network nodes, end nodes, and low-entry networking nodes. APPN runs on all Nortel Networks router platforms using local and wide area network facilities, as follows:

- LLC2 media, including Ethernet, token ring, and frame relay
- LLC2 using source routing bridge (SRB) encapsulation formats over Ethernet, FDDI, SMDS, frame relay, and Point-to-Point protocols (PPPs)
- SDLC links in point-to-point and multipoint configurations

The Nortel Networks APPN implementation complies with Version 2 of the IBM APPN Network Node specification, with advanced optional APPN function sets.

Large APPN networks typically consist of the following:

- A WAN APPN backbone
- Many (potentially thousands of) local branch sites, each with end nodes (ENs), low-entry networking nodes (LENs), and dependent logical units/ physical units that reside on a LAN. As many as two network nodes (NNs) serve each branch site.

Each NN maintains a topology database, which records every NN and transmission group in the network. As the number of nodes increases, the size of the topology database may exceed the available storage on an NN. Also, as nodes and their transmission groups are brought up and down, the topology information is propagated to every NN in the network. In large APPN networks, these topology updates use significant bandwidth. To reduce the APPN topology database size and the excessive data flows over the WAN links, you can incorporate APPN branch networks nodes (BrNNs).

Note: This document uses the term APPN branch network node (BrNN), which is also known as APPN branch extender node.

APPN Node Types

APPN supports the following node types:

- Network nodes
- End nodes
- Branch network nodes
- Low-entry networking nodes

Network Nodes

Network nodes (NNs) provide routing and networking services to other network nodes and end nodes. These services include locating network resources, calculating routes, and routing sessions. NNs use configured or dynamic control-point-to-control-point (CP-CP) sessions with adjacent nodes to manage, communicate, and exchange network topology and resource information. Any adjacent node that does not support control point sessions (such as a low-entry networking node) cannot participate in this exchange and must rely on static definitions. An NN that provides control point services to end nodes is called a network node server (NNS).

End Nodes

End nodes (ENs) have control points that allow them to register and share network information (using CP-CP sessions) with the NNS. End nodes provide APPN services to local users and applications and can operate independently in simple network configurations. In most configurations, end nodes are application hosts and workstations that register their resources with their network node server.

Branch Network Nodes

An APPN branch network node (BrNN) is a network node that implements the Branch Extender function, APPN option set 1121. The APPN BrNN connects a branch site to the WAN APPN backbone and emulates two types of nodes. The BrNN appears as an APPN end node to the backbone, and as an APPN network node to the branch nodes. Since the BrNN presents an EN image to the backbone, it does not send or receive topology updates; the BrNN prevents topology updates from flowing from the WAN backbone to the branch nodes. As a result, the BrNN reduces traffic on the WAN links to the branches, and eliminates the risk of exceeding the topology database storage capability of branch access devices.

When you configure a BrNN (as described later in the section "Configuring an APPN Branch Network Node" in Chapter 3), you must specify the image that you want the BrNN to present on its adjacent link stations. To do this, you identify the link station as *uplink* or *downlink*. Uplinks are link stations to which the BrNN presents an EN image. Downlinks are link stations on which the BrNN presents an NN image. By default, all link stations are downlinks. The BrNN can provide network node services to its branch over as many link stations (uplinks or downlinks) as you define. Likewise, a BrNN can receive network node service from an uplink network node server (NNS) over as many link stations as you define. However, since the BrNN presents an EN image on uplinks, it can have only one NNS at a time.

When a link between a BrNN and an NNS goes down, the BrNN tries to register with another NN over an uplink. When the original connection comes back up, the BrNN does not re-register with its original NNS. Site Manager allows you to specify a *preferred* NNS that you want the BrNN to use.

A BrNN can maintain one CP-CP session with an uplink NN. The uplink NN acts as the NNS to the EN side of the BrNN. If the link with the NNS fails, the BrNN initiates a CP-CP session with another uplink NN, if possible, and that NN becomes the new NNS. With the exception of BrNNs that are emulating ENs, networks nodes cannot connect over BrNN downlinks.

Low-Entry Networking Nodes

A low-entry networking node (LEN) is the simplest type of node in an APPN network. LEN nodes communicate with each other as adjacent peers.

LENs do not use control point sessions and cannot exchange resource information with an NN. Therefore, the resource information for LENs is preconfigured and supported at the NN. LENs typically include personal computers and workstations.

Figure 1-1 illustrates a simple APPN network with a network node, an end node, and two low-entry networking nodes.

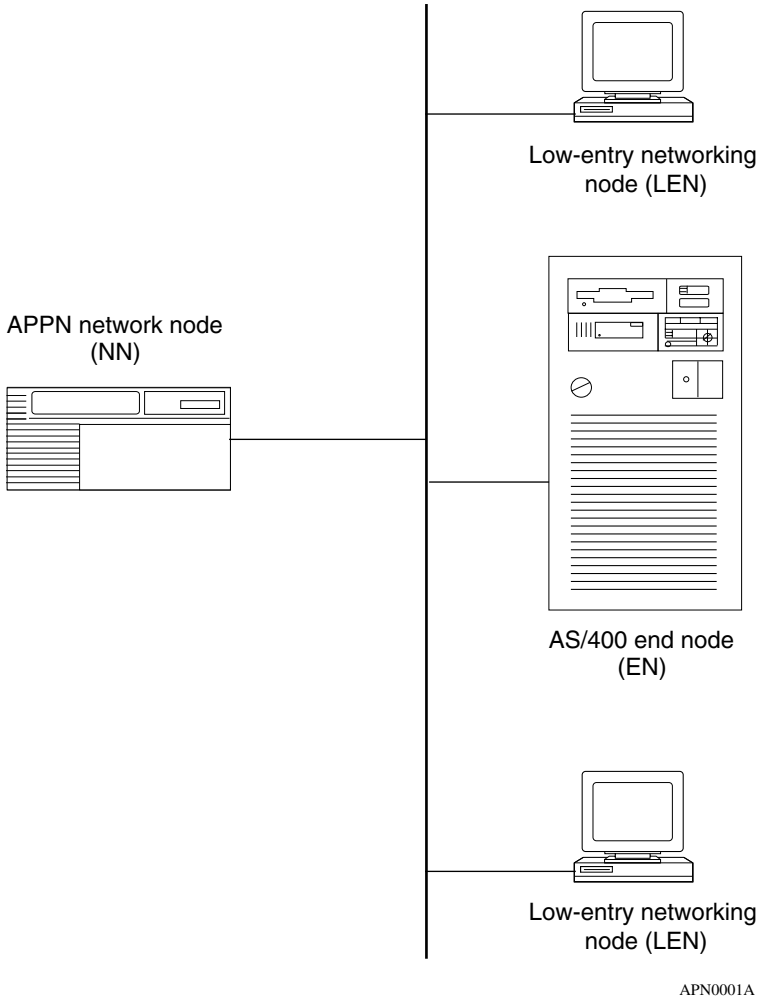

Figure 1-1. APPN Network with Different Node Types

Figure 1-2 shows a BrNN served by an NNS (BrNN.A). To the backbone and the other BrNNs, the end node and dependent LUs in its domain appear to reside on BrNN.A. The NNS for BrNN.B is not shown.

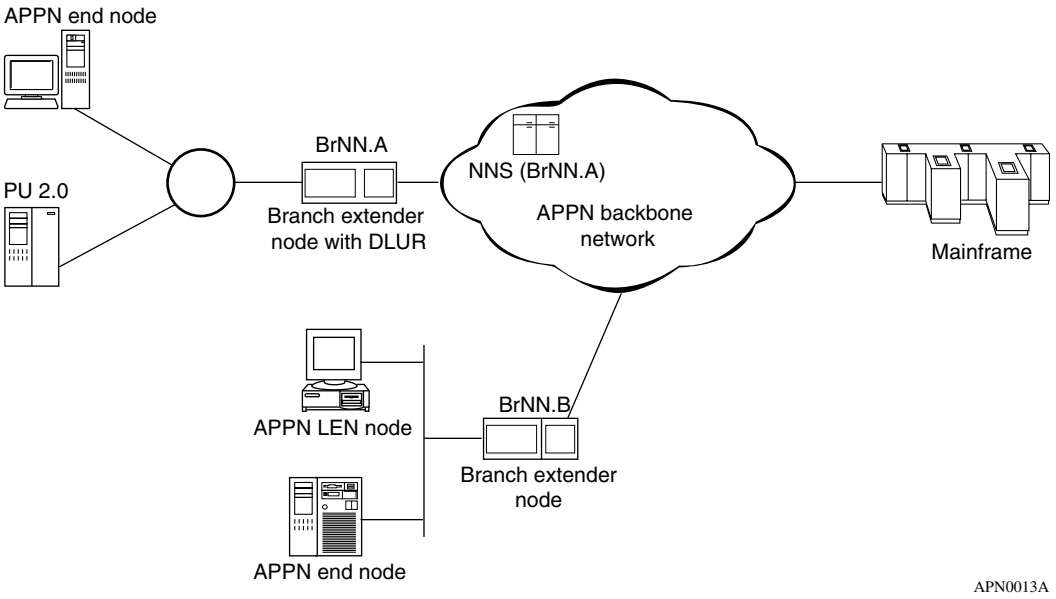

Figure 1-2. APPN Network Using Branch Network Nodes

Control Points and Logical Units

APPN uses control points (CPs) to manage nodes and network resources by establishing CP-CP sessions between nodes. All CP-CP sessions use logical unit (LU) 6.2 sessions.

During a CP-CP session (Figure 1-3), adjacent nodes exchange network information. Network nodes use CP-CP sessions to keep track of the network topology and directory information. Adjacent end nodes use CP-CP sessions to register resources and to request directory searches from the NNS.

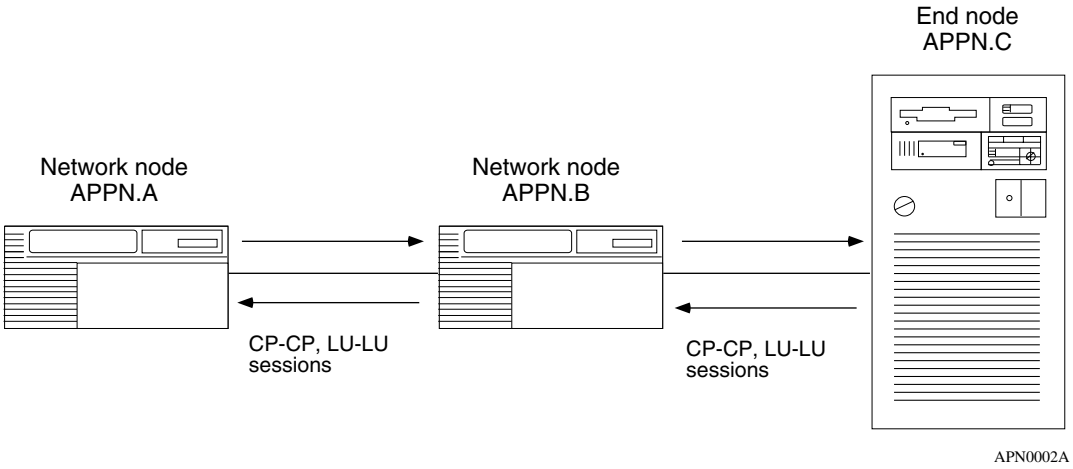

Figure 1-3. CP-CP and LU-LU Sessions

In Figure 1-3, APPN.C registers its local resources with APPN.B, and sends requests to APPN.B for information about the network and its resources. APPN.B functions as an NNS for APPN.C.

APPN.B has CP-CP sessions with both APPN.A and APPN.C. In this example, APPN.A and APPN.B exchange network topology and cooperate in directory searches.

Dependent Logical Unit Requester and Server

APPN's Dependent Logical Unit Requester (DLUR) supports LU type 0, 1, 2, 3 and LU 6.2 dependent logical units within APPN. In contrast to the base APPN architecture, which uses independent LUs for LU-to-LU sessions, dependent LUs need a mainframe-based system services control point (SSCP) to establish and manage LU-to-LU sessions. DLUR allows these dependent LUs to use APPN networks by encapsulating the SSCP control flows within the APPN LU 6.2 sessions. The APPN network routes the dependent LU-LU data flows.

DLUR works with the dependent logical unit server (DLUS) component of the Virtual Telecommunications Access Method (VTAM) to provide a path for SSCP flows between VTAM and dependent LUs across an arbitrary APPN backbone network. The DLUR node serves as a point of connection for PU 2.0 devices (such as 3270-type devices) to attach to an APPN backbone.

The DLUR and DLUS components in an APPN network allow the SSCP and the PU 2.0 device to exchange control flows across the APPN backbone. DLUR and DLUS form a tunnel (called a CP-SVR pipe) that allows the SSCP at the DLUS side of the pipe to send SNA control flows to the PU 2.0 device at the DLUR side of the pipe. The CP-SVR pipe is a pair of LU 6.2 sessions that encapsulate the SSCP control flows.

Figure 1-4 illustrates the DLUR and DLUS components in APPN.

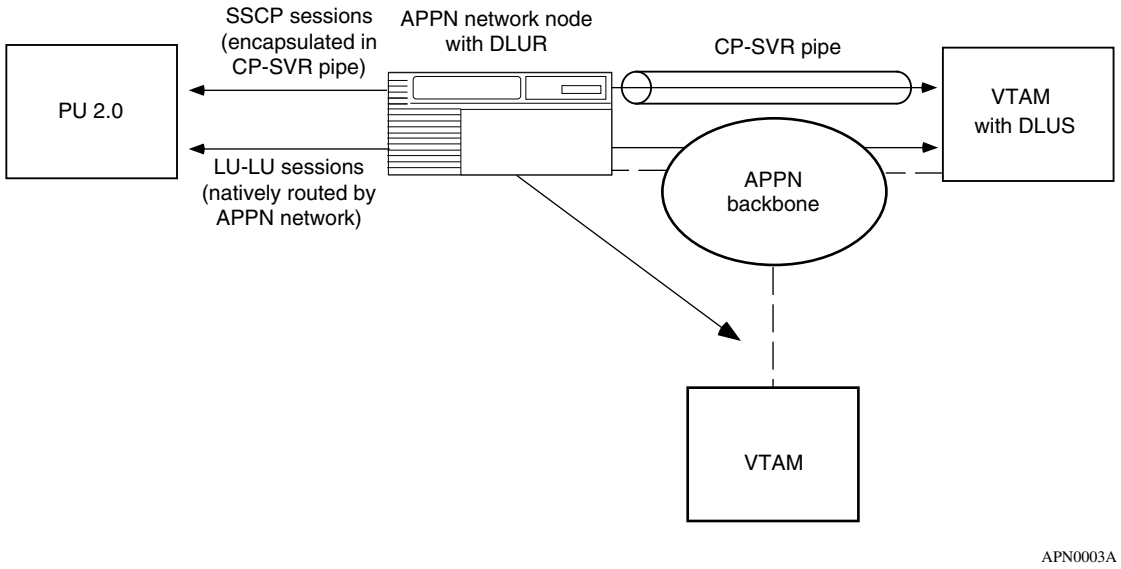

Figure 1-4. DLUR and DLUS in an APPN Network

Typically, in a large network, multiple DLUS nodes serve many DLUR nodes distributed across the APPN backbone. A DLUR node can establish pipes with several DLUS nodes, although a single PU 2.0 device can receive traffic from only one of them, because the device is only controlled by a single SSCP.

When the SSCP and the PU2.0 device exchange control flows, BINDs establish the path that the LU-LU session traffic uses through the network. Since the BIND flows independently of the CP-SVR pipe, the LU-LU traffic can take a different path through the network (the DLUS calculates a route using the topology database and class of service [COS] definitions). Refer to "APPN Services" on page 1-21 for information on the topology database and COS definitions.

Interfaces, Ports, and Link Stations

APPN configurations comprise interfaces, ports, and link stations. Figure 1-5 shows how interfaces, ports, and link stations in a simple APPN network relate.

Note: In this guide, the term “interface” has the same meaning as data link control (DLC) in IBM publications.

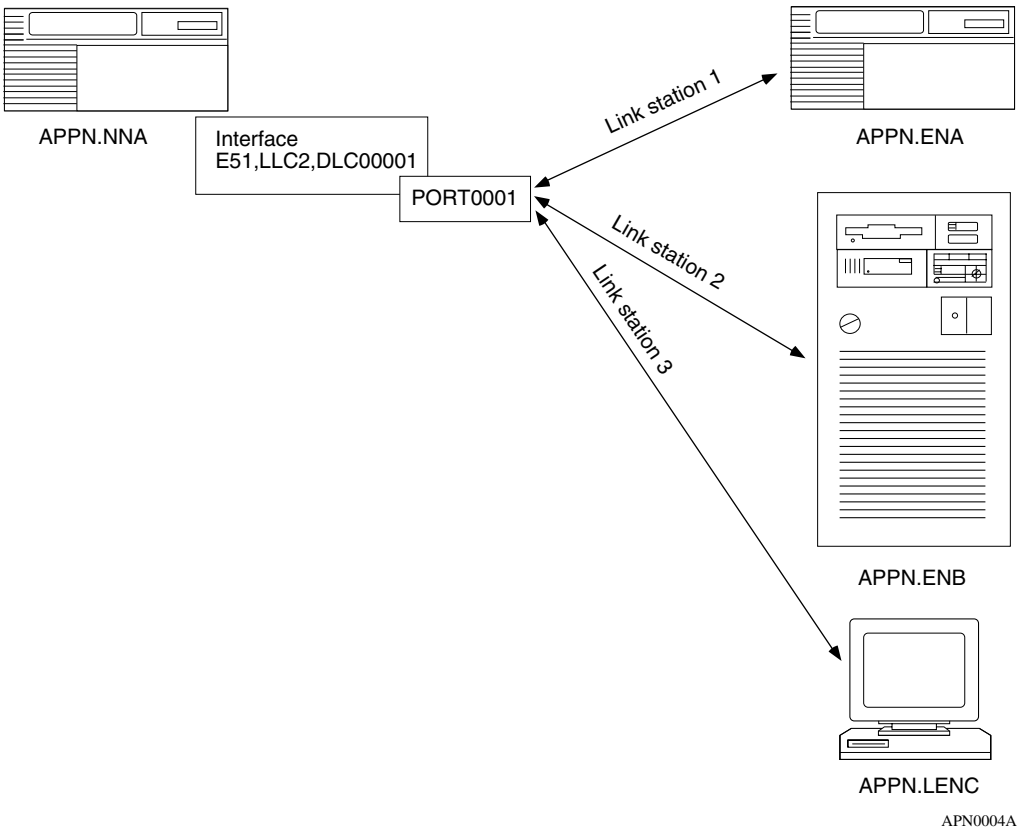

Figure 1-5. Interface, Port, and Link Station Relationship

Interfaces

Interfaces provide data link control (DLC) processes to ensure reliable delivery of information between adjacent stations using a specific data link protocol, such as LLC or SDLC.

Each APPN interface can support one or more ports.

A system-assigned DLC number (such as DLC00008) identifies APPN interfaces on Nortel Networks network nodes.

For information on adding and enabling APPN interfaces on Nortel Networks network nodes, refer to Chapter 2, "Starting APPN Services."

Ports

A port provides a unique access point (such as a MAC/SAP address pair) used by the local Nortel Networks network node. A port in an APPN network has a DLC process and a set of configurable parameters.

Link Stations

A link station is a logical connection between adjacent nodes. Link stations use ports to create this connection. Multiple link stations can exist on a single port, and multiple link stations can exist between the same two nodes. You can configure a link station entry, or APPN creates it dynamically when a remote node initiates a connection.

Note: The term link often refers to the physical components that enable two adjacent link stations to communicate. Within APPN, a link refers to a logical connection between two nodes. The term transmission group (TG) is also used throughout this manual and has the same meaning as link.

Link stations have a set of configurable parameters, such as:

- Link station name and the name of the adjacent node
- Adjacent link station role: primary, secondary, or negotiable
- Adjacent link station definitions, such as MAC and SAP addresses

Connection Networks

APPN end nodes on a shared access transport facility (SATF), such as a token ring network, are directly connected to each other; they can communicate with each other without having to route traffic through an intermediate network node. However, these end nodes still require definitions to other nodes and the nodes must be accessible over CP-CP sessions. A *connection network* (CN) simplifies APPN configurations by reducing the number of connections that you must configure between nodes on an SATF.

When two nodes on the same SATF exist on the same connection network, these nodes are unaware that they have a direct connection to each other; the NNS, acting as an APPN virtual routing node (VRN), calculates a route between the two end nodes so that they can communicate directly. For the end nodes to communicate with each other over a connection network, the end nodes require a connection to the VRN and a connection to the NNS.

Figure 1-6 illustrates a sample connection network. This connection network, such as that between EN2 and EN3, may use resources at the network node (NN1) to establish sessions with each other.

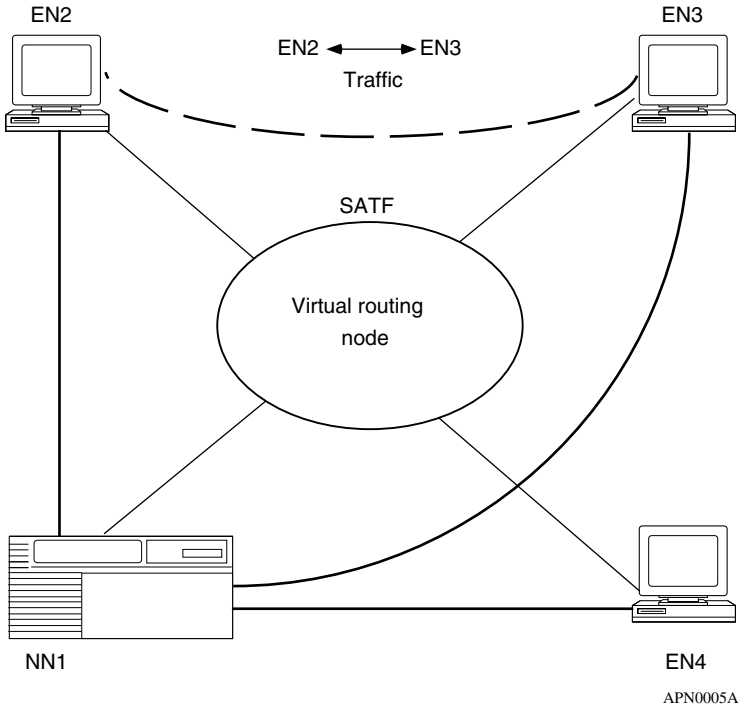

Figure 1-6. Sample APPN Connection Network

Intermediate Session Routing

Intermediate session routing (ISR) provides a reliable, connection-oriented, LU-LU session path between nonadjacent APPN nodes. ISR session connectors (SCs) and a session connection manager (SCM) forward sessions through the intermediate network node (Figure 1-7).

At session endpoints, the LU, with control point services, establishes a session with a session partner and routes session data back and forth with the partner LU. Intermediate network nodes do not control the LU endpoints, and LU services cannot be invoked on these nodes. ISR forwards session data to the next node along the session path.

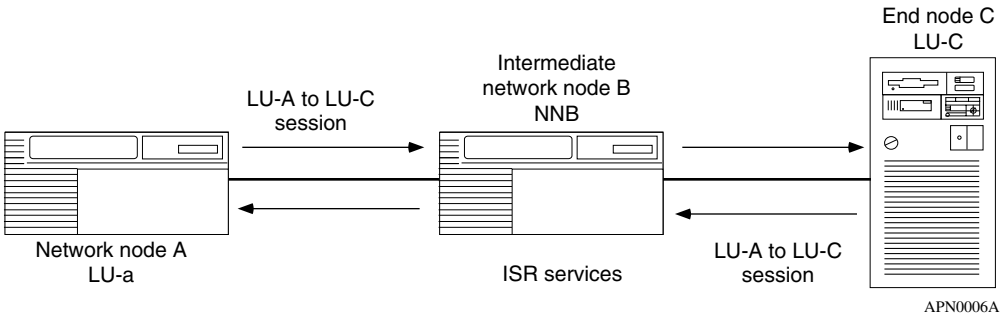

Figure 1-7. Nonadjacent LU-LU Session Through an Intermediate Node

In Figure 1-7, LU-A and LU-C are nonadjacent session partners. ISR at NNB forwards session data between the nonadjacent nodes, LU-A and LU-C. NNB creates an SC for each session passing through it.

Figure 1-8 illustrates ISR function placement in the SNA layered architecture. Routing takes place at the SNA layer 4, called the Transmission Control layer. Layer 4 performs flow control operations, specifically segmentation and reassembly, and pacing.

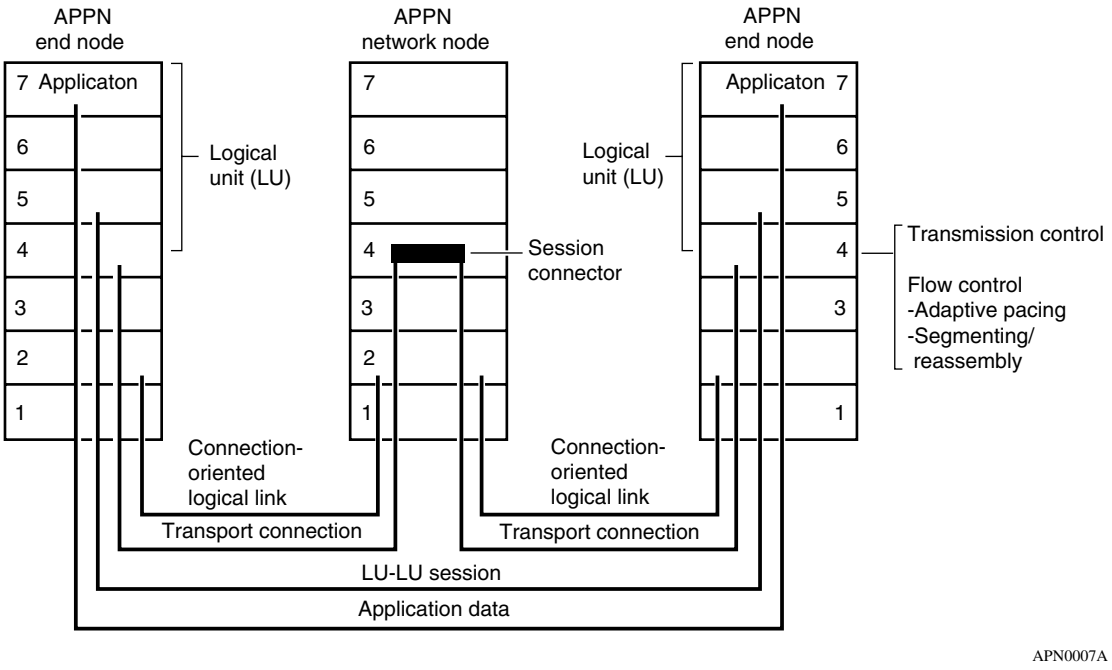

Figure 1-8. APPN ISR Routing Functions in SNA Architecture

Packet Segmentation and Reassembly

To maximize network performance, ISR sends the largest packet size allowable on each network interface that you configure for APPN. Intermediate nodes, when necessary, segment and reassemble packets of different packet sizes. The Max RU Size for ISR Sessions parameter sets the maximum packet size for your APPN configuration.

Adaptive Pacing

ISR's Adaptive Pacing controls data flow and congestion by managing the number of messages the network node receives during a session. To prevent memory consumption, APPN uses a "pacing window" to control the maximum number of incoming messages. During network activity, this pacing window changes dynamically, allowing the receiving node to adjust the rate at which data flows into its buffers.

To specify the maximum size of the adaptive pacing window, configure the ISR Receive Pacing Window parameter.

High-Performance Routing

APPN's high-performance routing (HPR) increases data routing performance and reliability. HPR allows high-speed forwarding in intermediate nodes at the Data Link Control layer (layer 2) of SNA, operating much faster than the intermediate session routing (ISR) base component in APPN. HPR consumes fewer network resources (memory and control processor) by:

- Minimizing storage and processing activities in intermediate nodes
- Reducing the amount of error recovery on individual lines
- Implementing a nondisruptive path switching function that reroutes sessions around failed links or nodes

HPR uses the Rapid Transport Protocol (RTP) and Automatic Network Routing (ANR). RTP also supports adaptive rate based (ARB) congestion control.

Figure 1-9 illustrates HPR in the SNA layered architecture. Routing takes place at the SNA Data Link Control layer. Layer 2 performs reliable, sequential delivery, selective retransmission, and nondisruptive rerouting using RTP, as described in this section.

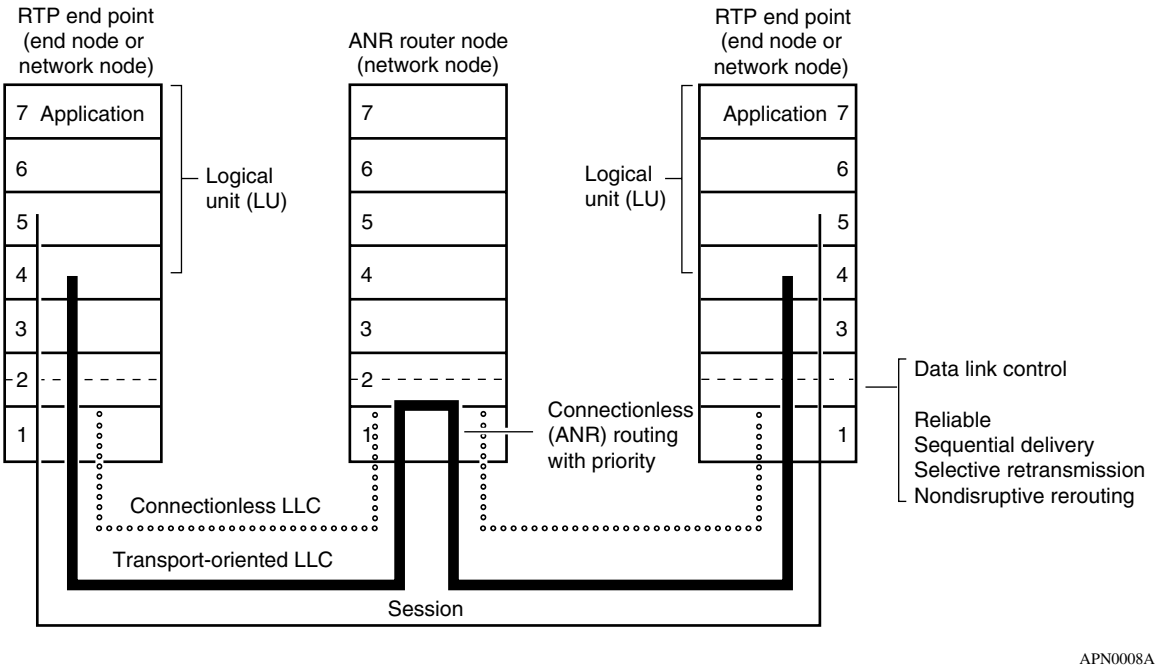

Figure 1-9. APPN HPR Routing Functions in SNA Architecture

Rapid Transport Protocol

RTP is a connection-oriented, full-duplex protocol that supports data in high-speed networks at APPN NN endpoints. HPR uses RTP connections to transport LU-LU and CP-CP traffic. A single RTP connection allows traffic from multiple APPN sessions (requesting the same class of service) to share the same logical "pipe." This conserves network resources by minimizing the role of intermediate NNs in the path, and by reducing error recovery and flow control operations.

Figure 1-10 illustrates an RTP connection supporting multiple sessions between endpoint nodes over a logical pipe.

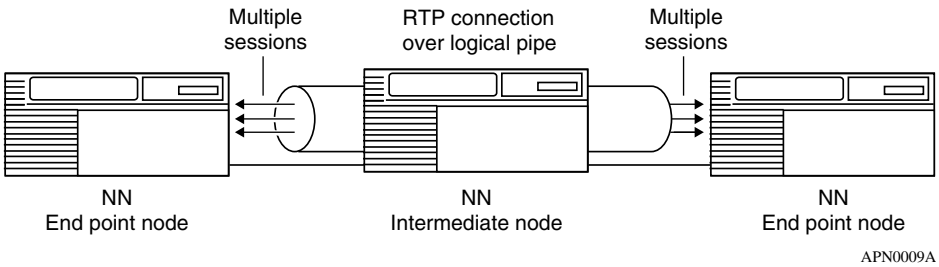

Figure 1-10. HPR RTP Connection Supporting APPN Sessions

RTP functions include:

- Nondisruptive path switching
- End-to-end error recovery
- End-to-end flow and congestion control

Nondisruptive Path Switching

The HPR nondisruptive path switch dynamically reroutes RTP connections around failed links or nodes. If a path fails, the RTP component at the NN endpoint of the logical link calculates a new path based on the desired class of service and transmission priority (if it exists). RTP performs the switching transparently so that the session is unaware that rerouting is taking place. Nondisruptive path switching forwards and reverses traffic to follow different routes through the network, and also recovers traffic that was lost at the time of failure.

End-to-End Error Recovery

End-to-end error recovery enables APPN NN endpoints to recovery lost traffic. HPR endpoint NNs always perform end-to-end recovery. However, Site Manager allows you to specify base APPN link-level error recovery, where error recovery is done on every link, consuming more network resources.

Note: High-speed links generally have low error rates. Therefore, link-level recovery may not be necessary in the higher speed HPR configurations.

When link-level recovery is turned off and an error is detected, the packet is discarded, resulting in a gap in the stream of bytes over the RTP connection. When the RTP connection endpoint NN detects the gap in the incoming byte stream, it informs the sender to begin retransmitting from the first byte after this point in the stream. RTP supports selective retransmission of parts of the byte stream, when the RTP endpoint requests a range of bytes for retransmission.

End-to-End Flow and Congestion Control

Operating at the NN sending and receiving endpoints of an RTP connection, HPR uses a preventative mechanism called adaptive rate-based (ARB) congestion control. ARB monitors, predicts, and regulates the flow of traffic into the network as conditions change. When the network approaches congestion (increased delay, decreased throughput), ARB reduces the input traffic rate so that a recipient endpoint NN can adequately handle the traffic.

With multiple RTP connections over a single link, the ARB function regulates the flow of traffic in all connections. This provides fairness to all connections.

With multiple SNA sessions over a single RTP connection, HPR's adaptive session-level pacing maintains fairness among the sessions. This prevents one session from unfairly consuming network resources, compared to other sessions on the RTP connection.

Automatic Network Routing

Automatic network routing (ANR) minimizes storage and processing requirements for routing packets through intermediate nodes. ANR functions include:

- Fast packet switching
- Session transparency
- Source routing

Fast Packet Switching

ANR operates at the Data Link Control layer of the SNA architecture. Operating at a lower layer than APPN, ISR improves packet switching performance in the intermediate nodes. Functions typically performed at the intermediate node (such as link-level recovery, segmentation, flow and congestion control) are performed at the RTP connection endpoints.

Session Transparency

Intermediate nodes are not aware of the SNA sessions or the RTP connections established across the nodes. This eliminates the need for storing routing tables and consuming resources (memory and buffers) at the intermediate nodes.

Source Routing

ANR uses a source routing algorithm. ANR carries the routing information in the network header of each packet. For each activated link, an ANR label is dynamically assigned to the packet. As a packet traverses the network, each node strips off the information it uses in the packet header before forwarding it, allowing the next node to easily find its routing information at a fixed place in the header. This allows faster switching through a node. Additionally, there is no ANR restriction on the number of hops in the network.

Figure 1-11 illustrates how ANR routes packets over an APPN HPR network. The intermediate network node strips the first routing label (A1) from the network header before forwarding the packet on the A1 link. C5 represents the endpoint in the last HPR node.

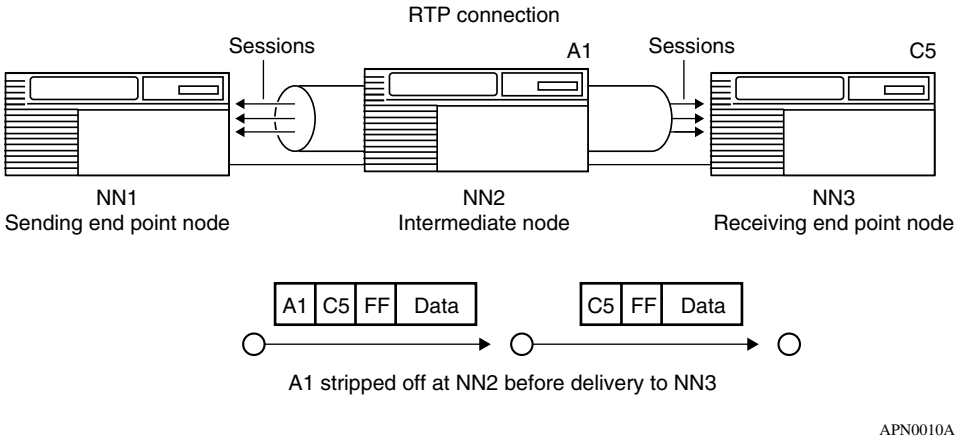

Figure 1-11. HPR ANR Routing and Packet Handling Operations

APPN Services

The APPN services on the NN include:

- Session services
- Directory services
- Topology and routing services
- Configuration services
- Management services

Session Services

Session services generates unique session identifiers, activates and deactivates CP-CP sessions to exchange network information, and assists LUs in initiating and activating LU-LU sessions. Session services:

- Invokes directory services to locate a partner LU
- Invokes topology and routing services (TRS) to calculate the optimal route between the origin and destination node
- Informs management services about newly activated or deactivated CP-CP sessions

Directory Services

Directory services manages the directory database and locates network resources throughout an APPN network. To locate network resources, directory services at each node collects resource information and maintains the information in a *local directory database*. Through a CP-CP session between an APPN network node and an adjacent APPN end node, the APPN network node registers (by end node request) the APPN end node's resources in its local directory database.

An APPN network node maintains database entries for:

- Local resources (LUs and the CP)
- End node resources within the APPN network node's domain
- End node or network node resources outside the APPN network node's domain (called cross-domain resources)

An APPN end node or low-entry networking node maintains database entries for:

- Local resources
- Local resources on adjacent nodes that have peer-to-peer communication sessions (without the presence of an APPN network node or control point, in the case of a peer-to-peer end node and low-entry networking node)

Topology and Routing Services

Topology and routing services (TRS) resides in every APPN network node and, in lesser form, in every APPN end node and low-entry networking node. In APPN network nodes, TRS collects and exchanges information on other network nodes, and the links between them. For LU-LU sessions, TRS provides the best route between any two LUs. In APPN end nodes and low-entry networking nodes, TRS collects information on links and adjacent nodes.

In APPN network nodes, TRS creates and maintains the COS database and a copy of the *network topology database*. The network topology database contains information on APPN network node connections to other network nodes and connection networks. (A *connection network* is a method of defining an APPN node attachment to a shared-access transport facility, reducing intermediate node routing and definition requirements.)

In APPN end nodes, TRS creates and maintains the COS database, and maintains the *local topology database* (also maintained by TRS at the network node). The local topology database contains information on connections involving the local end nodes: end node-to-end node, end node-to-network node, and end node-to-virtual routing node.

For LU-LU sessions, TRS computes the optimal route through an APPN network between the two nodes on which the LUs reside. A route in an APPN network is an ordered sequence of nodes and transmission groups (TGs) that represents a path from an origin to a destination, called a route selection control vector (RSCV). In APPN end nodes, TRS uses the local database to select possible transmission groups from the end node to an adjacent node. In APPN network nodes, TRS uses the information provided by the two end nodes, together with the information in the network node's COS and topology database, to select a route.

Configuration Services

Configuration services manages links to adjacent APPN nodes. The APPN node operator facility (NOF) initializes configuration services through Site Manager.

The basic configuration functions are:

- Node definition
- Interfaces
- Ports
- Adjacent link stations
- Connection networks
- Directory services

Refer to Chapter 3, "Customizing APPN Services," for detailed information on configuring APPN nodes.

Management Services

Management services controls and monitors the node's resources. If an error condition occurs, APPN receives or generates event messages about resources and conditions. For information on the APPN event messages, refer to *Event Messages Database.*

Chapter 2
Starting APPN Services

This chapter describes how to create basic APPN configurations by specifying parameter values where required and accepting default values for all other parameters.

This chapter includes the following information:

Topic	Page
Before You Begin	2-1
Starting APPN over LLC2 Interfaces	2-2
Starting APPN over LLC2 Interfaces Using SRB	2-3
Starting APPN over SDLC	2-5

Before You Begin

Before configuring APPN services, see *Configuring and Managing Routers with Site Manager* for instructions on how to start and use Site Manager. Also, you should have completed the following steps:

1. Open a configuration file.
2. Specify router hardware if this a local-mode configuration file.
3. Select the connector on which you are starting APPN.

Starting APPN over LLC2 Interfaces

When you configure APPN on LLC2 interfaces, such as Ethernet and token ring, the Configuration Manager requests media access control (MAC) and service access point (SAP) addresses. On synchronous interfaces where you are configuring APPN over frame relay, the Configuration Manager requests a data link connection identifier (DLCI) address and a SAP address.

To start APPN on Ethernet, token ring, or Nortel Networks synchronous interfaces using frame relay, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, select a link or net module connector that requires a WAN circuit.	The Add Circuit window opens.
2. Click on **OK**.	The Select Protocols window opens.
3. Choose **APPN**. When you choose APPN, you automatically choose LLC2.	
4. Click on **OK**.	The APPN Local Node Name Configuration window opens.
5. Set the **Local Node Name (NETID.NAME)** parameter. Click on **Help** or see the parameter description on page A-3.	
6. Click on **OK**.	For frame relay configurations, the APPN/FR Configuration window opens. If you are configuring standard LLC over Ethernet, the Configuration Manager displays the APPN Configuration window where you specify a MAC address instead of the DLCI address.
7. Set the following parameters: • **DLCI Address** (for frame relay only) • **SAP** • **MAC Address** Click on **Help** or see the parameter descriptions beginning on page A-4.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
8. Click on **OK**.	The Adjacent Link Station dialog box opens.
9. If you want to set up your APPN adjacent link stations now, click on **OK**. Go to "Configuring Adjacent Link Stations" on page 3-14. If you do not want to set up your adjacent link stations at this time, click on **Cancel**.	 The Configuration Manager window opens.

Starting APPN over LLC2 Interfaces Using SRB

If you are configuring LLC2 interfaces such as Ethernet, FDDI, SMDS, frame relay, and PPP, you can use SRB encapsulation formats.

To start APPN on Ethernet (Nortel Networks proprietary SRB over Ethernet) and frame relay (RFC 1490 Bridging Standard) using SRB, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, select a link or net module connector that requires a WAN circuit.	The Add Circuit window opens.
2. Click on **OK**.	The Select Protocols window opens.
3. Choose **APPN**. When you choose APPN, you automatically choose LLC2.	
4. Click on **OK.**	The Source Routing Global Parameters window opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
5. Set the following parameters: • **SR Bridge Internal LAN ID** • **SR Bridge ID** For instructions on configuring these parameters, see *Configuring Bridging Services*.	
6. Click on **OK**.	The Edit SR Interface window opens.
7. Set the **Source Routing Ring Number** parameter. For instructions on configuring this parameter, see *Configuring Bridging Services*.	
8. Click on **OK**.	The APPN Virtual Ring Number Configuration window opens.
9. Set the **Virtual Ring Number** parameter. Click on **Help** or see the parameter description on page A-6.	
10. Click on **OK**.	If this is the first interface for which you are configuring APPN, the APPN Local Node Name Configuration window opens. If this is not the first interface for which you are configuring APPN, the APPN Configuration window for your specific network opens.

Starting APPN over SDLC

To configure APPN on synchronous interfaces (COM1, COM2, and so forth) using the SDLC protocol, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, select a synchronous interface.	The Add Circuit window opens.
2. Click on **OK**.	The WAN Protocols window opens.
3. Choose **SDLC**.	
4. Click on **OK**.	The SDLC Line Parameters window opens.
5. Set the following parameters: • **Clock Source** • **Internal Clock Speed** • **Sync Line Coding** • **Cable Type** • **RTS Enable** For instructions on configuring these parameters, see *Configuring SDLC Services*.	
6. Click on **OK**.	The Select Protocols window opens.
7. Choose **APPN**.	
8. Click on **OK**.	If this is the first interface for which you are configuring APPN, the APPN Local Node Name Configuration window opens. If this is not the first interface for which you are configuring APPN, the APPN SDLC Address Configuration window opens.
9. Set the **SDLC Address** parameter. Click on **Help** or see the parameter description on page A-7.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
10. Click on **OK**.	The Adjacent Link Station Dialog box opens.
11. If you want to set up your APPN adjacent link stations now, click on **OK**. Go to "Configuring Adjacent Link Stations" on page 3-14. If you do not want to set up your adjacent link stations at this time, click on **Cancel**.	 The Configuration Manager window opens.

Chapter 3
Customizing APPN Services

This chapter includes the following information:

Topic	Page
Enabling APPN on the Router	3-2
Configuring an APPN Network Node	3-2
Enabling APPN on an Interface	3-9
Configuring Adjacent Link Stations	3-14
Configuring APPN Connection Networks	3-18
Configuring APPN Connection Network Ports	3-19
Configuring an APPN Branch Network Node	3-22

For a description of all Site Manager parameters for APPN, see Appendix A, “Site Manager Parameters.”

You can configure APPN over LLC and source route bridging. For instructions on configuring LLC, see *Configuring LLC Services*. For instructions on configuring source route bridging, see *Configuring Bridging Services*.

This chapter assumes that you have already added one or more interfaces to a router configuration file that you now want to edit for APPN. (Refer to *Configuring and Managing Routers with Site Manager* to learn how to add interfaces to the configuration file.)

Enabling APPN on the Router

To enable APPN on the router, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Set the **APPN Enable/Disable** parameter. Click on **Help** or see the parameter description on page A-8.	
5. Click on **OK.**	The Configuration Manager window opens.

Configuring an APPN Network Node

APPN network nodes provide routing and networking services to other network nodes and end nodes. These services include locating network resources, calculating routes, and routing sessions. Use the following procedures to configure an APPN network node in your network.

Configuring the Local Node Name, ID Block, and ID Number

To configure the node name, ID block, and ID number for an APPN router, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose Protocols.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Set the following parameters: • **Local Node Name** • **Local ID Block** • **Local ID Number** Click on Help or see the parameter descriptions beginning on page A-9.	
5. Click on **OK.**	The Configuration Manager window opens.

Configuring Intermediate Session Routing

Intermediate session routing (ISR) provides a reliable, connection-oriented, LU-LU session path between nonadjacent APPN nodes. To configure intermediate session routing, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Click on **Advanced**.	The Advanced APPN Global Parameters window opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
5. Set the following parameters: • **Route Addition Resistance** • **Endpoint Session RSCV Storage** • **Max Number of ISR Sessions** • **ISR Congestion Threshold** • **ISR Decongestion Threshold** • **Max RU Size for ISR Sessions** • **ISR Receive Pacing Window** • **ISR Session RSCV Storage** Click on **Help** or see the parameter descriptions beginning on page A-11.	
6. Click on **OK**.	The Configuration Manager window opens.

Configuring Directory Services

APPN directory services manages the directory database and locates network resources throughout an APPN network. To configure directory services, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Click on **Advanced**.	The Advanced APPN Global Parameters window opens.
5. Set the following parameters: • **Max Directory Entries** • **Max Cached Directory Entries** • **Network Locate Timeout** Click on **Help** or see the parameter descriptions beginning on page A-12.	
6. Click on **OK**.	The Configuration Manager window opens.

Adding APPN Directory Entries

You can define directory entries for network resources that APPN cannot dynamically locate, such as LUs on a LEN node. Directory entries can avoid network searches for commonly used resources. The directory is hierarchical in structure. For example, to configure directory entries for LUs on an adjacent LEN node, first configure the LEN as an end node control point (ENCP) with the local NN as the parent. You then define LUs with the LEN as the parent.

Directory entries can specify the full name of the resource, or can include an asterisk (*) to indicate a wildcard entry. Wildcard entries simplify the definition of many similarly named resources. For example, if a node contains LUs named APPN.LUX1, APPN.LUX2, and so on, you can use the single wildcard entry APPN.LUX*.

To add a qualified LU name to the directory services list, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Directory Entries**.	The APPN Directory Entry List window opens. The window displays the qualified LU names of any APPN nodes currently configured for directory services in the local directory database.
4. Click on **Add**.	The Directory Entry Configuration window opens.
5. Set the **Resource Name** and **Parent Name** parameters. Click on **Help** or see the parameter descriptions beginning on page A-74.	
6. Click on **OK**.	The APPN Directory Entry List window opens.
7. Click on **Done**.	The Configuration Manager window opens.

Enabling APPN Directory Entries

To enable directory entries, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Directory Entries**.	The APPN Directory Entry List window opens. The window displays the qualified LU names of any APPN nodes currently configured for directory services in the local directory database.
4. Set the **Enable/Disable** parameter. Click on **Help** or see the parameter description on page A-71.	
5. Click on **Done**.	The Configuration Manager window opens.

Changing a Directory Entry

To change a directory entry, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Directory Entries**.	The APPN Directory Entry List window opens. The window displays the qualified LU names of any APPN nodes currently configured for directory services in the local directory database.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
4. Set the following parameters: • **Resource Type** • **Parent Name** • **Parent Type** Click on **Help** or see the parameter description on page A-74.	
5. Click on **Done**.	The Configuration Manager window opens.

Configuring Topology and Routing Services

Topology and routing services (TSR) resides in every APPN network node. TRS collects and exchanges information on other network nodes, and the links between them. To configure topology and routing services, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Click on **Advanced**.	The Advanced APPN Global Parameters window opens.
5. Set the following parameters: • **TRS Route Tree Cache Size** • **TRS Route Tree Cache Usage Limit** • **Max NNs in Topology DB** • **Max TGs in Topology DB** Click on **Help** or see the parameter descriptions beginning on page A-14.	
6. Click on **OK**.	The Configuration Manager window opens.

Configuring the Dependent Logical Unit Requester and Server

The dependent logical unit requester (DLUR) and the dependent logical unit server (DLUS) components in an APPN network allow the mainframe-based system services control point (SSCP) and the PU 2.0 device to exchange control flows across the APPN backbone.

To configure the dependent logical unit requester and server, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Click on **Advanced**.	The Advanced APPN Global Parameters window opens.
5. Set the following parameters: • **DLUR Support Enable/Disable** • **Default DLUS Name** • **Default Backup DLUS Name** • **DLUR-DLUS RSCV Storage** Click on **Help** or see the parameter descriptions beginning on page A-17.	
6. Click on **OK**.	The Configuration Manager window opens.

Configuring High-Performance Routing

APPN's high-performance routing (HPR) increases data routing performance and reliability. It allows high-speed forwarding in intermediate nodes at the Data Link Control layer of SNA, operating much faster than the ISR base component in APPN.

To configure high-performance routing, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Click on **Advanced**.	The Advanced APPN Global Parameters window opens.
5. Set the following parameters: • **HPR Support** • **HPR Path Switch Controller Support** Click on **Help** or see the parameter descriptions beginning on page A-20.	
6. Click on **OK**.	The Configuration Manager window opens.

Enabling APPN on an Interface

To enable APPN on a router interface, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Interfaces**.	The APPN Interface List window opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
4. Click on the interface on which you want to enable or disable APPN routing.	
5. Set the **Interface Enable/Disable** parameter. Click on **Help** or see the parameter description on page A-21.	
6. Click on **Done**.	The Configuration Manager window opens.

Configuring APPN Ports

The following sections describe how to:

- Add ports to an APPN interface
- Enable an APPN port
- Specify a port address or the initial role of the local network node when activating adjacent link stations through this port
- Customize an APPN port

Adding Ports to an APPN Interface

To add ports to an interface, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Interfaces**.	The APPN Interface List window opens.
4. Click on the interface to which you want to add ports.	
5. Click on **Ports**.	The APPN Port List window opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
6. Click on **Add**.	The APPN Port Configuration window or APPN/FR Port Configuration window opens.
7. Set the following parameters: • **Port Name** • **Port Number** • **Port DLCI Address** (frame relay only) • **Port MAC Address** • **Port SAP** • **SDLC Address** (SDLC only) • **Local Link Station Role** Click on **Help** or see the parameter descriptions beginning on page A-25.	
8. Click on **OK**.	The APPN Port List window opens.
9. Click on **Done**.	The APPN Interface List window opens.
10. Click on **Done**.	The Configuration Manager window opens.

Enabling an APPN Port

To enable a port, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Interfaces**.	The APPN Interface List window opens.
4. Click on the interface you want to modify.	
5. Click on **Ports**.	The APPN Port List window opens.
6. Click on the port that you want to enable.	
7. Set the **Port Enable/Disable** parameter. Click on **Help** or see the parameter description on page A-23.	
8. Click on **Apply** to save your changes.	

Site Manager Procedure *(continued)*	
You do this	**System responds**
9. Click on **Done**.	The APPN Interface List window opens.
10. Click on **Done**.	The Configuration Manager window opens.

Specifying an APPN Port

To specify a port address or the initial role of the local network node when activating adjacent link stations through this port, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Interfaces**.	The APPN Interface List window opens.
4. Click on the interface you want to modify.	
5. Click on **Ports**.	The APPN Port List window opens.
6. Click on the port whose parameters you want to edit.	
7. Set the following parameters: • **Port Address** • **Local Link Station Role** Click on **Help** or see the parameter descriptions beginning on page A-23.	
8. Click on **Apply** to save your changes.	
9. Click on **Done** to exit the window.	The APPN Interface List window opens.
10. Click on **Done**.	The Configuration Manager window opens.

Customizing an APPN Port

To specify the maximum BTU size that a port can send or receive, to specify the total, inbound, and outbound link activation limits for this port, or to specify transmission costs, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Interfaces**.	The APPN Interface List window opens.
4. Click on the interface you want to modify.	
5. Click on **Ports**.	The APPN Port List window opens.
6. Click on the port whose parameters you want to edit.	
7. Click on **Advanced**.	The APPN Port window opens.
8. Set the following parameters: • **Max Receive BTU Size** • **Max Send BTU Size** • **Max I-Frame Window** • **Total Link Activation Limits** • **Inbound Link Activation Limits** • **Outbound Link Activation Limits** • **Implicit CP Sessions** • **Implicit Limited Resource** • **Implicit Effective Capacity** • **Implicit Connection Cost** • **Implicit Byte Cost** Click on **Help** or see the parameter descriptions beginning on page A-29.	
9. Click on **OK**.	The APPN Port List window opens.
10. Click on **Done**.	The APPN Interface List window opens.
11. Click on **Done**.	The Configuration Manager window opens.

Configuring Adjacent Link Stations

The following sections describe how to:

- Add an adjacent link station
- Enable an adjacent link station
- Change an adjacent link station
- Customize an adjacent link station

Adding an Adjacent Link Station

To add an APPN adjacent link station, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Adjacent Link Stations**.	The APPN Adjacent Link Station List window opens.
4. Click on **Add**.	The APPN Adjacent Link Station Port Configuration window opens.
5. Set the **Port Name** parameter. Click on **Help** or see the parameter description on page A-47.	
6. Click on **OK**.	The APPN Adjacent Link Station Configuration window specific to your network opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
7. Set the following parameters: • **Adjacent Link Station Name** • **Adjacent Node Name** • Address parameters for the specific network (MAC, SAP, DLCI, SDLC) • **Enable DLUR Support for this LS** • **Primary DLUS Name** • **DSPU Name** • **Adjacent Node ID Number** • **Adjacent Node Block Number** Click on **Help** or see the parameter descriptions beginning on page A-49.	
8. Click on **OK**.	The APPN Adjacent Link Station List window opens.
9. Click on **Done**.	The Configuration Manager window opens.

Enabling an Adjacent Link Station

To enable an adjacent link station, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Adjacent Link Stations**.	The APPN Adjacent Link Station List window opens.
4. Click on the adjacent link station that you want to enable or disable.	
5. Set the **Enable/Disable** parameter. Click on Help or see the parameter description on page A-40.	
6. Click on **Apply** to save your changes.	The Configuration Manager window opens.

Changing an Adjacent Link Station

To change an adjacent link station, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Adjacent Link Stations**.	The APPN Adjacent Link Station List window opens.
4. Click on the adjacent link station whose parameters you want to edit.	The APPN Adjacent Link Station Port Configuration window opens.
5. Set the following parameters: • **Port Name** • **Adjacent Node Name** • **Adjacent Node Type** • **Enable DLUR Support for this LS** • **Primary DLUS Name** Click on **Help** or see the parameter descriptions beginning on page A-40.	
6. Click on **OK**.	The APPN Adjacent Link Station Configuration window specific to your network opens.
7. Set the following parameters: • **Adjacent Link Station Name** • **Adjacent Node Name** • Address parameters for the specific network (MAC, SAP, DLCI, SDLC) • **Enable DLUR Support for this LS** • **Primary DLUS Name** • **DSPU Name** • **Adjacent Node ID Number** • **Adjacent Node Block Number** Click on **Help** or see the parameter descriptions beginning on page A-49.	
8. Click on **OK**.	The APPN Adjacent Link Station List window opens.
9. Click on **Done**.	The Configuration Manager window opens.

Customizing an Adjacent Link Station

To customize an adjacent link station, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Adjacent Link Stations**.	The APPN Adjacent Link Station List window opens.
4. Click on the link station that you want to customize.	
5. Click on **Advanced**.	The APPN Adjacent Link Station Advanced Configuration window opens.
6. Set the following parameters: • **Limited Resource TG** • **TG Number** • **CP-CP Session Support** • **Automatic Activation** • **Backup DLUS Name** • **Use Default TG Characteristics** • **Effective Capacity** • **Connection Cost** • **Byte Cost** • **Security** • **Delay** • **LLC Error Recovery Under HPR** • **Link Deactivation** Click on **Help** or see the parameter descriptions beginning on page A-55.	
7. Click on **OK**.	The APPN Adjacent Link Station List window opens.
8. Click on **Done**.	The Configuration Manager window opens.

Configuring APPN Connection Networks

The following sections describe how to:

- Add an APPN connection network
- Enable an APPN connection network

Adding an APPN Connection Network

An APPN connection network lets you route session traffic directly between two link stations, without intermediate node intervention. Connection networks require link definitions at a network node for any directly connected nodes.

To add an APPN connection network, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Connection Network**s.	The APPN Connection Network List window opens.
4. Click on **Add**.	The Connection Network Configuration window opens.
5. Set the following parameters: • **Connection Network Name** • **Connection Network Port Name** Click on **Help** or see the parameter descriptions beginning on page A-64.	
6. Click on **OK**.	The APPN Connection Network List window opens.
7. Click on **Done**.	The Configuration Manager window opens.

Enabling an APPN Connection Network

To enable an APPN connection network, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Connection Networks**.	The APPN Connection Network List window opens.
4. Click on the connection network that you want to enable or disable.	
5. Set the **Enable/Disable** parameter. Click on **Help** or see the parameter description on page A-62.	
6. Click on **Apply** to save your changes.	
7. Click on **Done**.	The Configuration Manager window opens.

Configuring APPN Connection Network Ports

The following sections describe how to:

- Add an APPN connection network port
- Enable an APPN connection network port
- Customize an APPN connection network port

Adding an APPN Connection Network Port

To add an APPN connection network port, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Connection Networks**.	The APPN Connection Network List window opens.
4. Click on the connection network to which you want to add a port.	
5. Click on **Ports**.	The APPN Connection Network Port List window opens.
6. Click on **Add**.	The Connection Network Port Configuration window opens.
7. Set the **Connection Network Port Name** parameter. Click on **Help** or see the parameter description on page A-66.	
8. Click on **OK**.	The APPN Connection Network Port List window opens.
9. Click on **Done**.	The APPN Connection Network List window opens.
10. Click on **Done**.	The Configuration Manager window opens.

Enabling an APPN Connection Network Port

To enable an APPN connection network port, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Connection Networks**.	The APPN Connection Network List window opens.
4. Click on the connection network whose ports you want to edit.	
5. Click on **Ports**.	The APPN Connection Network Port List window opens.
6. Set the **Enable/Disable** parameter. Click on **Help** or see the parameter description on page A-65.	
7. Click on **Apply** to save your changes.	
8. Click on **Done**.	The APPN Connection Network List window opens.
9. Click on **Done**.	The Configuration Manager window opens.

Customizing an APPN Connection Network Port

To customize an APPN connection network port, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
3. Choose **Connection Networks**.	The APPN Connection Network List window opens. The connection network name that you selected appears in the title bar.
4. Click on the connection network whose ports you want to edit.	
5. Click on **Advanced**.	The APPN Connection Network Advanced Parameters window opens.
6. Set the following parameters: • **Effective Capacity** • **Connection Cost** • **Byte Cost** • **Security** • **Delay** Click on **Help** or see the parameter descriptions on page A-57.	
7. Click on **OK**.	The APPN Connection Network List window opens.
8. Click on **Done**.	The Configuration Manager window opens.

Configuring an APPN Branch Network Node

To configure a router as an APPN branch network node, you must have already configured the router as an APPN network node (that is, APPN must be enabled on the router). You must then do the following:

- Enable BrNN support on the node.
- Specify whether you want to register branch resources with the NNS.
- Define the BrNN uplinks and downlinks.
- Define whether implicit link stations are uplink or downlink
- Indicate whether to register BrNN resources with the NNS.
- Specify the adjacent link station that will become the NNS when a non-operational link between a BrNN and an NNS becomes operational.

Enabling BrNN Support

To enable BrNN support, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Set the **Branch Extender Support** parameter to Enable. Click on **Help** or see the parameter description on page A-10.	
5. Click on **OK**.	The Configuration Manager window opens.

Registering Branch Resources

When a BrNN learns about new domain resources, it can do one of the following:

- Register with the NNS only resources that are located on the BrNN.
- Register all known domain resources, including all of the BrNNs own resources. If domain ENs register resources, the BrNN forwards these to the NNS.
- Perform no registration of branch resources to the NNS.

To specify the type of registration (if any) that the BrNN performs, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
3. Choose **Global**.	The Edit APPN Global Parameters window opens.
4. Click on **Advanced**.	The Advanced APPN Global Parameters window opens.
5. Set the **Register with NN** parameter. Click on Help or see the parameter description on page A-20.	
6. Click on **OK**.	The Configuration Manager window opens.

Defining BrNN Uplinks and Downlinks

To define BrNN uplinks and downlinks, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Adjacent Link Stations**.	The APPN Adjacent Link Station List window opens.
4. To add adjacent link stations that you want to define as BrNN uplinks or downlinks, click on **Add**. To edit existing APPN adjacent link stations to define them as uplinks or downlinks, go to step 7.	The APPN Adjacent Link Station Port Configuration window opens.
5. Set the **Port Name** parameter. Click on **Help** or see the parameter description on page A-40.	
6. Click on **OK**.	The APPN Adjacent Link Station List window opens.
7. Click on the link station that you want to define as a BrNN uplink or downlink.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
8. Set the following parameters: • **Branch Link Type** • **Adjacent BrNN Support** Click on **Help** or see the parameter descriptions beginning on page A-45.	
9. Click on **Apply** to save your changes.	
10. Click on **Done** to exit the window.	The Configuration Manager window opens.

Defining a Preferred Network Node Server

When a link between a BrNN and its NNS goes down, the BrNN tries to register with another NN over an uplink. When the original connection comes back up, the BrNN does not re-register with its original NNS. Site Manager allows you to specify which NN you want to select as the NNS.

You can choose a node to be a preferred NNS when:

- The Branch Link Type parameter on the APPN Adjacent Link Station List window is set to Uplink
- The Adjacent BrNN Support parameter on the APPN Adjacent Link Station List window is set to either Allowed or Required

To define a preferred NNS, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Adjacent Link Stations**.	The APPN Adjacent Link Station List window opens.
4. Click on the link station that you want to define as a preferred NNS.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
5. Set the **Preferred NN Server** parameter to Yes. Click on **Help** or see the parameter description on page A-46.	
6. Click on **Apply** to save your changes.	
7. Click on **Done** to exit the window.	The Configuration Manager window opens.

Defining the Link Type for Implicit Link Stations

A BrNN must specify its link stations as either uplink or downlink. However, in the case of an implicit link that an adjacent end node starts, the link type is not defined. You can use the Implicit Uplink to EN parameter to identify (as uplinks or downlinks) all implicit link stations that an adjacent end node starts. This parameter allows you to specify the implicit link station type on a per-port basis.

Note: You do not have to specify the link type for implicit link stations that adjacent network nodes or adjacent BrNNs start. You must do so only for implicit link stations that adjacent end nodes start.

To define the link type for implicit link stations off a specific port, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **APPN**.	The APPN menu opens.
3. Choose **Interfaces**.	The APPN Interface Link window opens.
4. Click on the interface whose parameters you want to edit.	
5. Click on **Ports**.	The APPN Port List window opens.
6. Click on the port you want to modify.	

(continued)

Site Manager Procedure *(continued)*	
You do this	**System responds**
7. Click on **Advanced**.	The APPN Port window opens.
8. Set the **Implicit Uplink to EN** parameter. Click on **Help** or see the parameter description on page A-38.	
9. Click on **OK**.	The Configuration Manager window opens.

APPN BrNN Configuration Examples

This section provides sample configurations of APPN networks using branch network nodes.

Cascaded BrNNs

In the following configuration, BrNN.A acts as the NNS for BrNN.B. BrNN.A's domain includes all of the nodes on TR1 and BrNN.B. BrNN.B's domain includes the nodes on TR2. To BrNN.A, the nodes on TR2 appear to reside on BrNN.B.

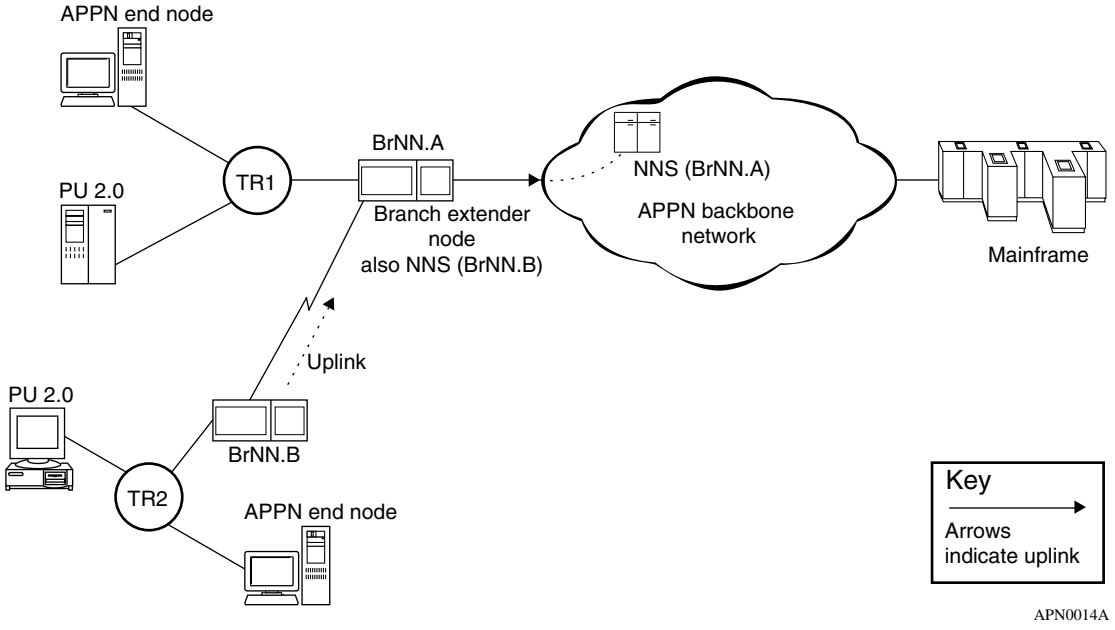

Figure 3-1. APPN Network Using Cascaded BrNNs

Peer BrNNs

In the following configurations, the nodes and stations on TR1 can belong to either of the domains (BrNN.A or BrNN.B). An EN can register with only one of the BrNNs.

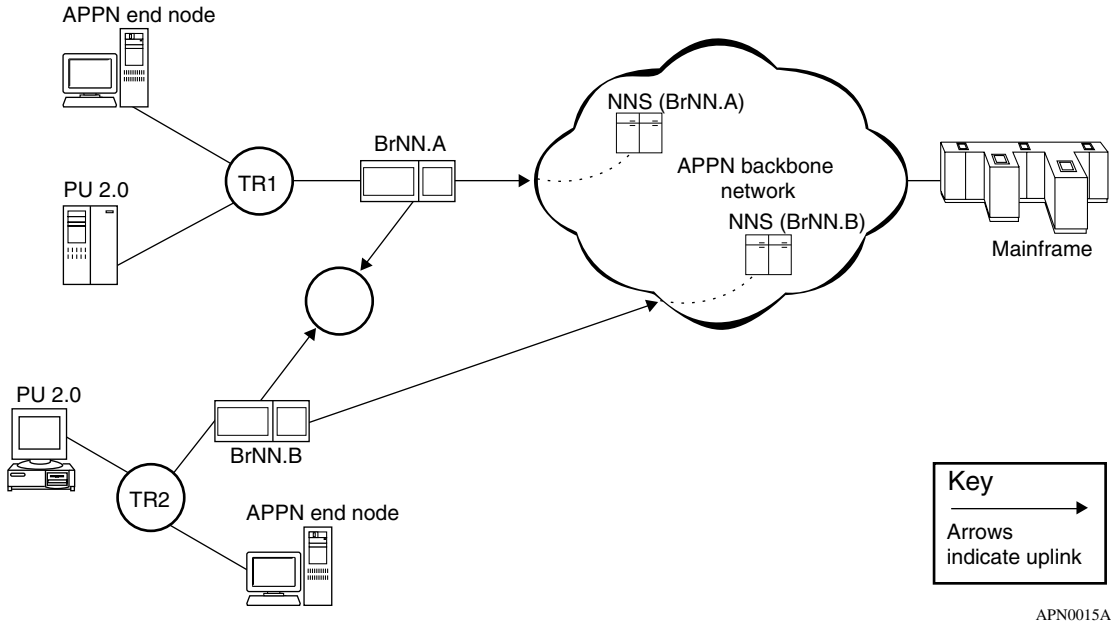

Figure 3-2. APPN Network Using Peer BrNNs

BrNNs in Connection Networks

In the following configuration, BrNN.A and BrNN.B have defined a connection network NET01.VRN. The connection network routes the LU.C-LU.D session directly between the BrNNs. The backbone does not need to provide intermediate session routing/high-performance routing (ISR/HPR).

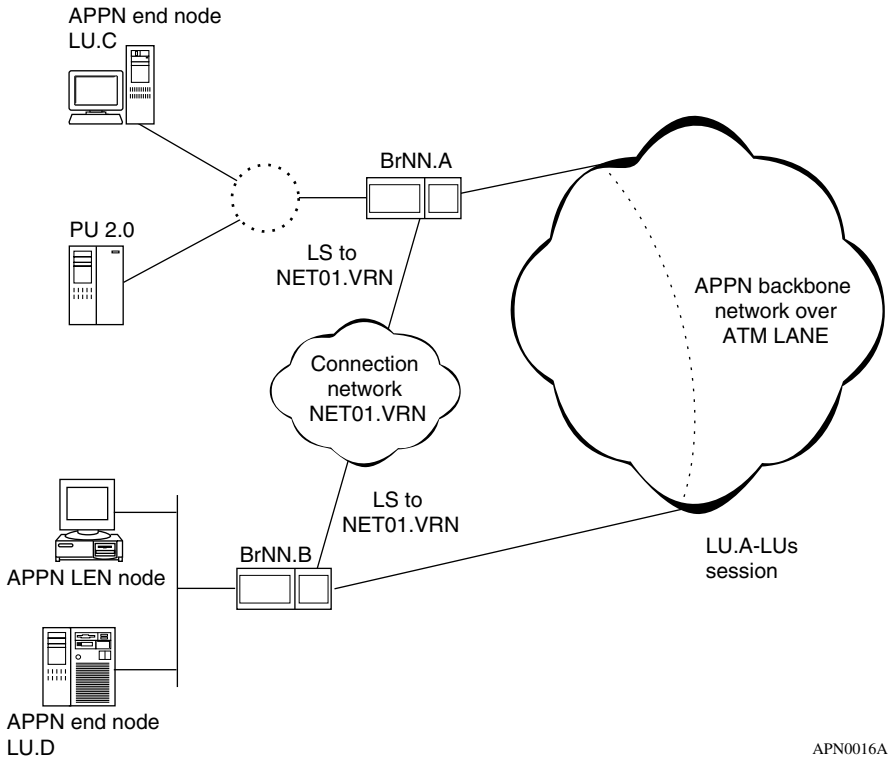

Figure 3-3. BrNNs in Connection Networks

Appendix A
Site Manager Parameters

This appendix describes the APPN service parameters in the order listed in the Site Manager windows. The parameters are organized as follows:

Topic	Page
APPN Local Node Name Configuration Parameter	A-2
APPN/FR Configuration Parameters	A-3
APPN Virtual Ring Number Configuration Parameter	A-5
APPN SDLC Address Configuration Parameter	A-6
APPN Global Parameters	A-7
Advanced APPN Global Parameters	A-10
APPN Interface List Parameter	A-21
APPN Port List Parameters	A-22
APPN/FR Port Configuration Parameters	A-24
APPN Port Parameters	A-28
APPN Adjacent Link Station Parameters	A-38
Add APPN Adjacent Link Station Port Configuration Parameter	A-47
APPN/SDLC Adjacent Link Station Configuration Parameters	A-48
APPN Adjacent Link Station Advanced Configuration Parameters	A-54
APPN Connection Network List Parameter	A-62
Connection Network Configuration Parameters	A-63
APPN Connection Network Port List Parameter	A-64
Connection Network Port Configuration Parameter	A-66
APPN Connection Network Advanced Parameters	A-66

(continued)

Topic	Page
APPN Directory Entry List Parameters	A-70
Directory Entry Configuration Parameters	A-73

Using the Parameter Descriptions

Each APPN parameter description provides information about default settings, valid parameter options, the parameter function, instructions for setting the parameter, and the management information base (MIB) object ID.

The Technician Interface allows you to modify parameters by issuing **set** and **commit** commands with the MIB object ID. This process is equivalent to modifying parameters using Site Manager. For more information about using the Technician Interface to access the MIB, see *Using Technician Interface Software*.

Caution: The Technician Interface does not verify that the value you enter for a parameter is valid. Entering an invalid value can corrupt your configuration.

APPN Local Node Name Configuration Parameter

The APPN Local Node Name Configuration window (Figure A-1) allows you to specify the local node name for the node the first time you start APPN over an LLC2 interface.

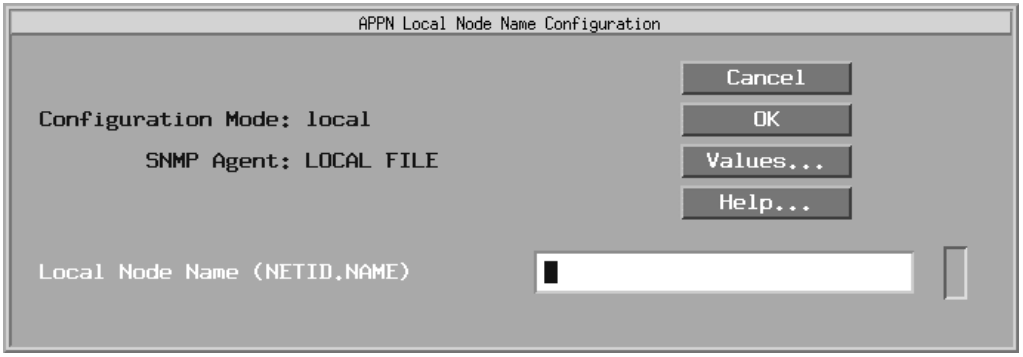

Figure A-1. APPN Local Node Name Configuration Window

Parameter: Local Node Name

Path: Parameter appears when you first configure APPN.

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<CPNAME>*; *NETID* is the global network name with up to 8†characters followed by a period, and *CPNAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: The Local Node Name parameter identifies the unique name of the network and the Nortel Networks router node name.

Instructions: Type the node name by first specifying up to 8 characters in the network ID name, type a period, then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Local Node Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.4

APPN/FR Configuration Parameters

The APPN/FR Configuration window (Figure A-2) allows you to set the DLCI address (for frame relay only), MAC address, and the SAP.

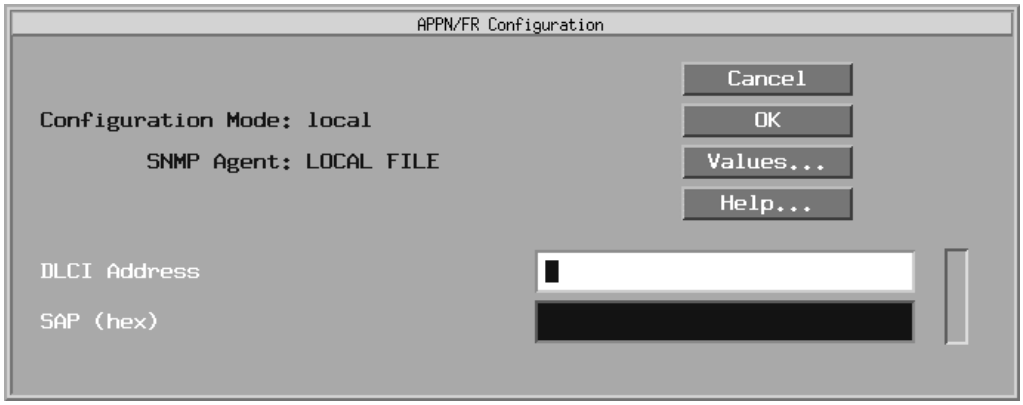

Figure A-2. APPN/FR Configuration Window

Parameter: DLCI Address

Path: Parameter appears when you first configure APPN.

Default: None

Options: Valid range changes based on the frame relay address length, as follows:

- If the address length is 2 bytes, the range is 16 to 1007
- If the address length is 3 bytes, the range is 1024 to 64511
- If the address length is 4 bytes, the range is 131072 to 8257535

Function: The DLCI is the frame relay PVC identification number. The frame relay network uses the DLCI to direct basic data flow.

Instructions: Enter a decimal number within the valid range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter: **SAP**

Path: Parameter appears when you first configure APPN.

Default: None

Options: Any unique SAP 2-digit hexadecimal value, usually 04 with APPN.

Function: Specifies a SAP address that lets multiple applications and protocol entities in a single computer share a MAC address.

Instructions: Enter a 2-digit hexadecimal value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter: **MAC Address**

Path: Parameter appears when you first configure APPN.

Default: None

Options: Any unique 48-bit 12-digit hexadecimal MAC-level address

Function: Specifies a unique MAC-level address for this port.

Instructions: Enter a 12-digit hexadecimal MAC-level address in most significant bit (MSB) noncanonical format, regardless of the media.

When you configure APPN on an Ethernet interface, you must obtain the "burned in" address of the adapter from the MIB and convert the address from canonical to noncanonical (MSB) format.

When you configure APPN on a token ring interface, use a Locally Administered Address (LAA). If an adapter is replaced, you will not have to reconfigure the address or any devices that reference the address. To configure the LAA for the token ring address, change the token ring parameter MAC Address Select to CNFG. Then, enter the address in the MAC Address Override field. For instructions, see *Configuring Ethernet, FDDI, and Token Ring Services*.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

APPN Virtual Ring Number Configuration Parameter

The APPN Virtual Ring Number Configuration window (Figure A-3) allows you to specify a unique SRB ring number to be used by APPN. The number must be unique in the SRB network.

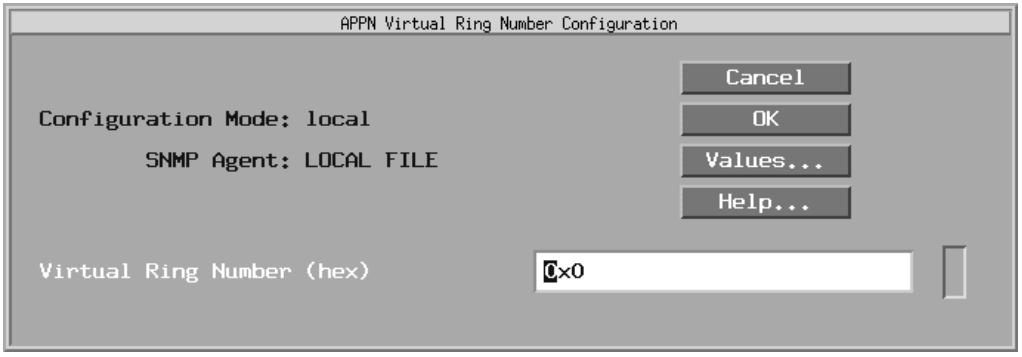

Figure A-3. APPN Virtual Ring Number Configuration Window

Parameter: Virtual Ring Number

Path:	Parameter appears when you first configure APPN.
Default:	None
Options:	1 to 4095
Function:	Specifies the unique SRB ring number to be used by APPN. It must be unique in the SRB network. This means that the Virtual Ring Number must be different not only from the ring IDs specified in the SRB configuration, but different also from other Nortel Networks routers running APPN on LLC2/SRB media.
Instructions:	Specify the unique LLC ring number in the range 1 to 4095.
MIB Object ID:	1.3.6.1.4.1.18.3.5.1.6.2.25

APPN SDLC Address Configuration Parameter

The APPN SDLC Address Configuration Parameter window (Figure A-4) allows you to specify an SDLC address for the interface.

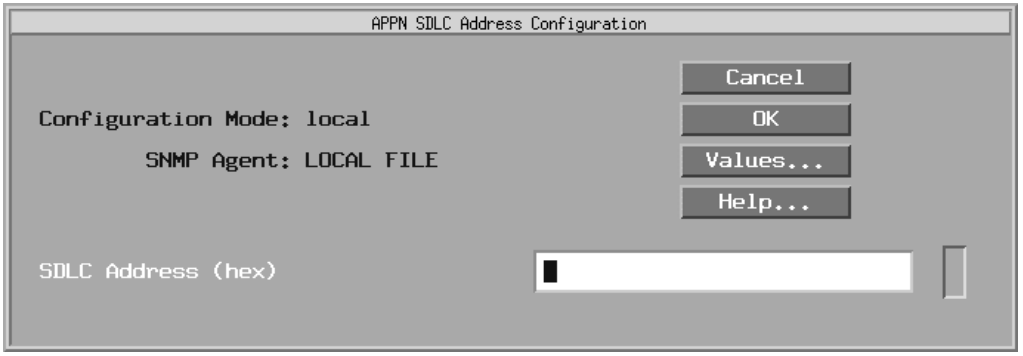

Figure A-4. APPN SDLC Address Configuration Window

Parameter: SDLC Address

Path:	Parameter appears when you first configure APPN.
Default:	None
Options:	Any unique 2-digit hexadecimal SDLC-level address
Function:	Specifies a unique SDLC address for this circuit.
Instructions:	Enter a 2-digit hexadecimal address.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.38

APPN Global Parameters

The Edit APPN Global Parameters window (Figure A-5) contains the parameters that let you:

- Enable or disable APPN on the router
- Specify the local node name, ID block, and ID number

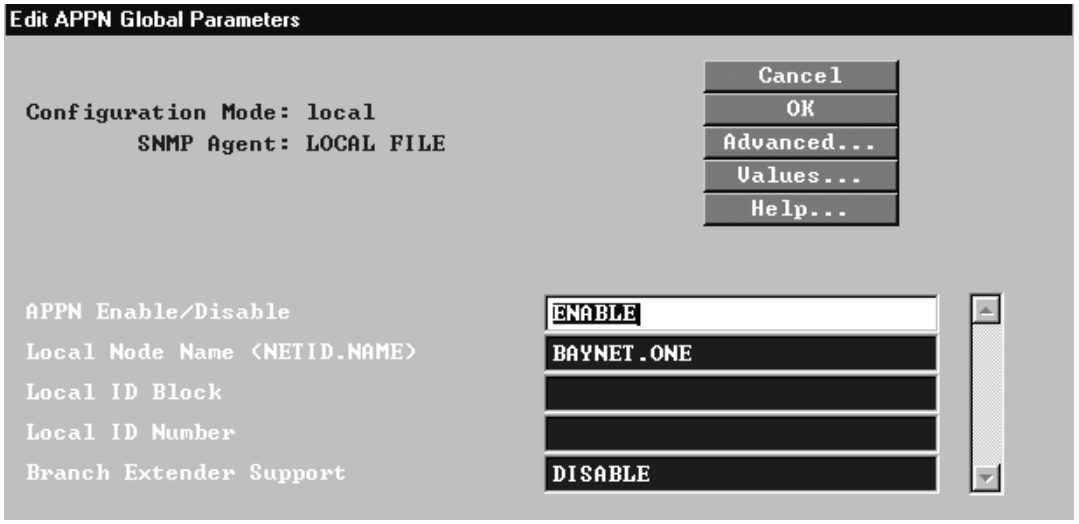

Figure A-5. Edit APPN Global Parameters Window

Parameter: APPN Enable/Disable

Path: Configuration Manager > Protocols > APPN > Global

Default: Enable

Options: Enable | Disable

Function: Globally enables or disables APPN on the router.

Disable -- Forces every APPN interface existing on the node into the "down" (inoperative) state.

Enable -- Reinitializes every APPN interface existing on the node; each interface maintains the most recent setting of its own Interface Enable/Disable parameter.

Instructions: Select Disable to force every APPN interface existing on the node into the "down" (inoperative) state.

Select Enable to globally reinitialize all APPN interfaces configured on the node; each interface will maintain the most recent setting of its own Interface Enable/Disable parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.2

Parameter: Local Node Name

Path: Configuration Manager > Protocols > APPN > Global

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<CPNAME>*; *NETID* is the global network name with up to 8 characters followed by a period, and *CPNAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: The Local Node Name parameter identifies the unique name of the network and the Nortel Networks router node name.

Instructions: Type up to 8 characters for the network ID name, type a period, then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Local Node Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.4

Parameter: Local ID Block

Path: Configuration Manager > Protocols > APPN > Global

Default: None

Options: A valid string of 3 hexadecimal digits

Function: A unique hexadecimal value identifies the APPN product in this NN. The number is the first 3 digits of the node identification.

Instructions: Accept the displayed value or enter 3 hexadecimal digits in this field.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.6

Parameter:	**Local ID Number**
Path:	Configuration Manager > Protocols > APPN > Global
Default:	None
Options:	A valid string of 5 hexadecimal digits (0 to 9, A, B, C, D, E, F)
Function:	Identifies the local APPN network node and is present in APPN alerts and exchange identifications (XIDs). These 5 digits are combined with the 3-digit local ID block to form a unique XID node identification. The APPN network node and the adjacent node exchange node identifications when establishing a connection.
Instructions:	Enter 5 hexadecimal digits.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.7

Parameter:	**Branch Extender Support**
Path:	Configuration Manager > Protocols > APPN > Global
Default:	Disable
Options:	Enable | Disable
Function:	Globally enables or disables APPN Branch Network Node support on the node.
Instructions:	Select Enable to allow this node to function as an APPN BrNN. Select Disable if you do not want this node to function as an APPN BrNN.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.1.60

Advanced APPN Global Parameters

The Advanced APPN Global Parameters widow (Figure A-6) contains general parameters associated with APPN directory services, intermediate session routing, and topology and routing services.

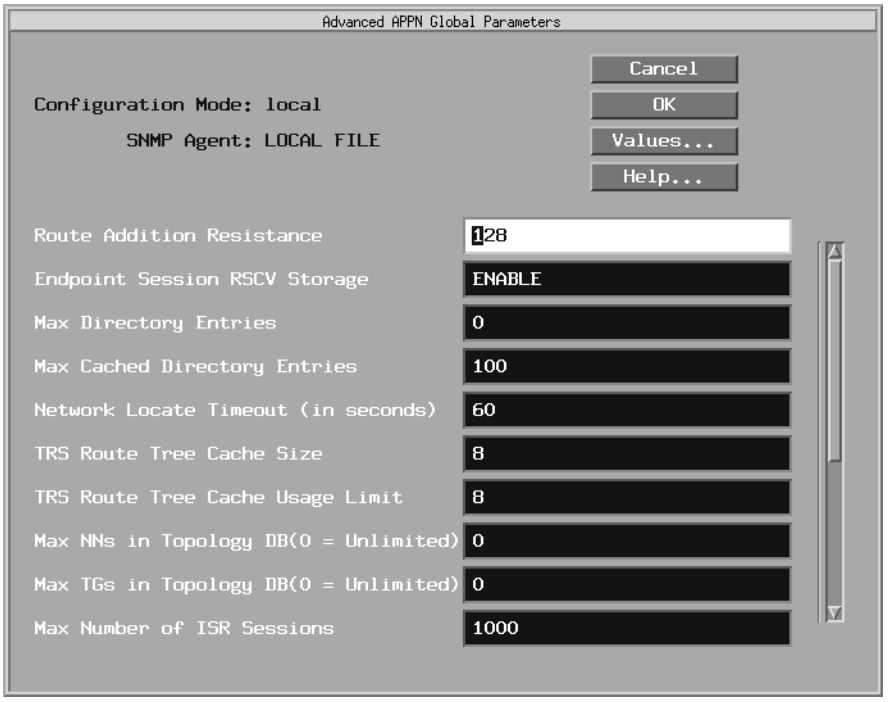

Figure A-6. Advanced APPN Global Parameters Window

Parameter: Route Addition Resistance

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 128

Options: 0 to 255

Function: Indicates the relative desirability of using this network node for ISR when multiple paths exist.

Instructions: Enter a value from 0 to 255. The lower the value, the more desirable the node becomes for ISR.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.21

Parameter: Endpoint Session RSCV Storage

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: Enable

Options: Enable | Disable

Function: When enabled, stores route selection control vector information used by the network node if it is the endpoint (origin or destination) node in the route. This parameter is useful when you are using the Technician Interface to debug logged APPN events and statistics. Refer to *Using Technician Interface Scripts* for information on using the **show appn** command.

When enabled, this parameter consumes additional memory for each endpoint session.

Instructions: Select Enable to enable endpoint session RSCV storage. Select Disable to disable endpoint session RSCV storage.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.29

Parameter: Max Directory Entries

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 0

Options: A value of 0 indicates an unlimited number of entries; otherwise, any positive numeric value

Function: Specifies the maximum number of entries that APPN stores in the directory database at the network node. The directory database stores information about network resources and their location in the APPN network.

Instructions: Enter a value large enough for the network being managed, or specify 0 for unlimited entries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.32

Parameter: Max Cached Directory Entries

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 100

Options: Any positive numeric value

Function: Specifies the maximum number of cached directory entries that APPN stores in the local directory database at any one time. The caching can ultimately result in large local directory databases that may include out-of-date resource entries. If the maximum number is reached and if all entries are in use, new entries to be cached replace the oldest cache entries.

Instructions: Enter a value large enough for the network being managed. Increase the current value if the oldest valid entries are being replaced on a regular basis.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.31

Parameter: Network Locate Timeout

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 60

Options: Specify 0 to indicate no timeouts

Function: Specifies the length of time (in seconds) before a network search times out. The network search function locates network resources and controls the flow of search requests and replies throughout the network.

Instructions: Enter a positive time value in seconds. If directory services at the local network node does not receive a search response at the completion of this timeout value, the search is terminated. When the local network node receives the search response, the search is complete.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.33

Parameter: TRS Route Tree Cache Size

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 8

Options: 8 to 2147483674

Function: Specifies the size of the topology and routing services tree database. The tree database allows a network node to cache optimal routes from the local APPN node to other network nodes (tree caching).

Instructions: Enter a positive numeric value in the range 8 to 2147483674 to indicate the maximum number of routing trees to be stored in the database.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.34

Parameter: TRS Route Tree Cache Usage Limit

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 8

Options: 1 to 2147483674

Function: Specifies the maximum number of times a route tree will be used before route selection services calculates a new route tree for that class of service.

Instructions: Enter any positive numeric value in the range 1 to 2147483674.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.35

Parameter: Max NNs in Topology DB

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 0

Options: Any positive number; specify 0 to indicate an unlimited number of network nodes

Function: Specifies the maximum number of network nodes (routers) in the network topology database.

Instructions: Specify 0 to include all network nodes.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.36

Parameter: **Max TGs in Topology DB**

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 0

Options: Any valid positive number; specify 0 to indicate an unlimited number of TGs

Function: Specifies the maximum number of TGs in the network topology database. A TG represents a single unidirectional connection (or link) to an adjacent link station.

Instructions: Specify 0 to include all TGs.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.37

Parameter: **Max Number of ISR Sessions**

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 1000

Options: 100 to 2147483674

Function: Specifies the maximum number of ISR sessions that the local network node can support concurrently.

Instructions: Enter a value of 100 to 2147483674.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.38

Parameter: **ISR Congestion Threshold**

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 900

Options: Any positive numeric value less than the Max Number of ISR Sessions parameter setting

Function: Specifies the maximum number of ISR sessions before the node considers itself congested, causing it to direct new sessions away. A network node is no longer congested when the number of ISR sessions drops to the setting of the ISR Decongestion Threshold parameter.

Instructions: Enter any positive numeric value less than the setting for the Max Number of ISR Sessions parameter. In most cases, a value equal to 90% of the Max Number of ISR Sessions parameter is a reasonable value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.39

Parameter: **ISR Decongestion Threshold**

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 800

Options: Any positive numeric value less than the ISR Congestion Threshold parameter setting

Function: Specifies the number of active ISR sessions that the local network node must drop to before it is no longer congested. A network node is congested when the number of ISR sessions reaches the ISR congestion threshold.

Instructions: Enter any positive numeric value that is less than the current ISR Congestion Threshold parameter setting. In most cases, a value equal to 80% of the Max Number of ISR Sessions parameter is a reasonable value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.40

Parameter: **Max RU Size for ISR Sessions**

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 4096

Options: 256 to 4096

Function: Specifies the maximum request unit size for the segmentation and reassembly of session and nonsession traffic during the ISR sessions.

Instructions: Enter a positive number in the range 256 to 4096.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.41

Parameter: **ISR Receive Pacing Window**

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: 7

Options: 1 to 63

Function: Specifies the maximum number of messages that the network node can receive in one window during an ISR session. Pacing windows control the number of messages to prevent memory consumption.

Instructions: Enter a positive number in the range 1 to 63. Entering higher values may improve performance, but consumes more memory.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.42

Parameter: ISR Session RSCV Storage

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: Enable

Options: Enable | Disable

Function: Enables or disables the storage of route selection control vectors (RSCVs) during ISR sessions. This parameter is useful for debugging. When enabled, it consumes additional memory for each ISR session.

The intermediate network node uses RSCV information to obtain the next node and a TG to the node along a route. The maximum number of APPN nodes and TGs a session can traverse is limited to the size of the RSCV.

Instructions: Select Enable to enable ISR session RSCV storage. Select Disable to disable ISR session RSCV storage.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.43

Parameter: DLUR Support Enable/Disable

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: Disable

Options: Enable | Disable

Function: Enables or disables DLUR support at the network node. DLUR is an APPN component that allows dependent logical units (LU type 0, 1, 2, 3 and dependent LU6.2) within APPN.

Instructions: Click on Values and select Enable to start DLUR at the network node, or select Disable to stop DLUR at the network node.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.45

Parameter: Default DLUS Name

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters

Function: Specifies the fully qualified default name of the DLUS node that serves the PU2.0 adjacencies configured on this node. APPN uses the default name when the DLUR Support Enable/Disable parameter is set to Enable, and when the DLUR Implicit LS Support parameter is set to Enable for implicit link stations on the port.

Instructions: If the DLUR Support Enable/Disable parameter is set to Enable, type up to 8 characters for the network ID, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUR is a valid entry for this parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.54

Parameter: Default Backup DLUS Name

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: Specifies the fully qualified default backup name of the DLUS node that serves PU2.0 adjacencies configured on this node. APPN uses the default backup name when the DLUR Support Enable/Disable parameter is set to Enable, and when the DLUR Implicit LS Support parameter is set to Enable for implicit link stations on the port.

Instructions: If the DLUR Support Enable/Disable parameter is set to Enable, type up to 8 characters for the network ID name, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUR is a valid entry for this parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.55

Parameter: DLUR-DLUS RSCV Storage

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**

Default: Enable

Options: Enable | Disable

Function: Enables or disables the storage of route selection control vectors (RSCVs) during DLUR/DLUS sessions. This parameter is useful for network monitoring and debugging. When enabled, it will consume additional memory for each DLUR/DLUS session. It is *not* used if the DLUR Support Enable/Disable parameter is set to Disable.

Instructions: Click on Values and select Enable to enable DLUR-DLUS RSCV storage. Select Disable to disable DLUR-DLUS RSCV storage.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.44

Parameter: HPR Support

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**
Default: Enable
Options: Enable | Disable
Function: Enables HPR on this node.
Instructions: Click on Values and select Enable or Disable.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.50

Parameter: HPR Path Switch Controller Support

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**
Default: Disable
Options: Enable | Disable
Function: Enables this node as an HPR patch switch controller/initiator. This parameter is available when the HPR Support parameter is set to Enable.

Typically, you only set this parameter to Enable if your network node is a mobile or wireless (satellite communications) partner. The Enable setting prevents unneeded path switch attempts by the nonmobile partner.

Instructions: Click on Values and select Enable or Disable.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.51

Parameter: Register with NN

Path: Configuration Manager > Protocols > APPN > Global > **Advanced**
Default: None
Options: None | All | Local
Function: Indicates how the BrNN handles registration of new domain resources to the NNS.
Instructions: Select None if you do not want the BrNN to register branch resources with the NNS. Select All if the BrNN should register with the NNS all known domain resources. Select Local if the BrNN should register only resources that are located on the BrNN.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.1.61

APPN Interface List Parameter

The APPN Interface List window (Figure A-7) allows you to display and enable (or disable) the current port or ports on an interface.

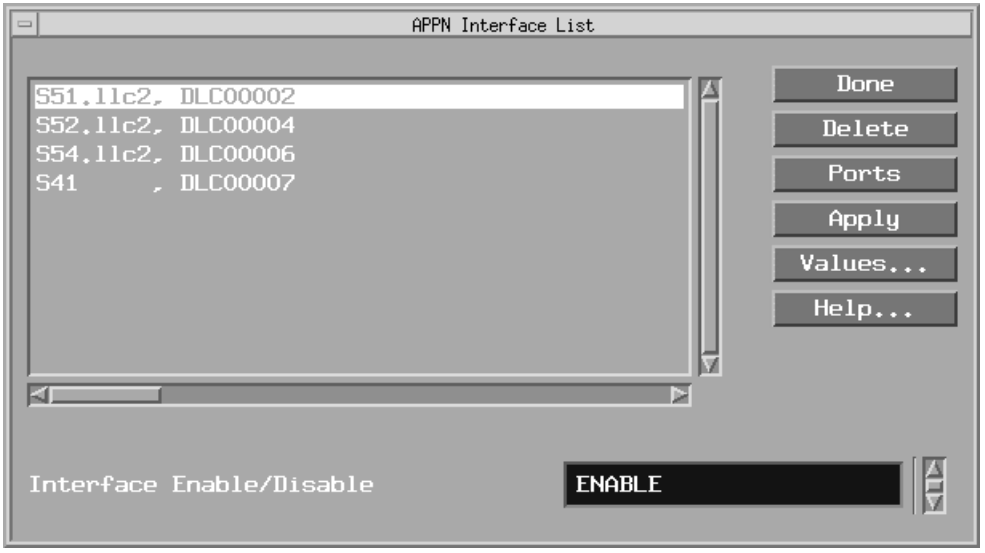

Figure A-7. APPN Interface List Window

Parameter: Interface Enable/Disable

Path: Configuration Manager > Protocols > APPN > Interfaces

Default: Enable

Options: Enable | Disable

Function: Enables or disables APPN routing on this interface.

Enable -- Initializes the selected APPN interface. You can also use the Enable setting to initialize an existing APPN interface that you disabled earlier.

Disable -- Forces the APPN interface into the “down” (inoperative) state.

Instructions: Select Disable to disable APPN routing over this interface.

Select Enable to enable or reenable APPN routing over this interface.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.2.1.2

APPN Port List Parameters

The APPN Port List Parameter window (Figure A-8) allows you to add additional ports to the interface, delete ports, or edit advanced port parameters.

Figure A-8. APPN Port List Window

Parameter: Port Enable/Disable

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports**

Default: Enable

Options: Enable | Disable

Function: Enables or disables APPN routing on this port.

Enable -- Initializes the selected APPN port. You can also use the Enable setting to initialize an existing APPN port that you disabled earlier.

Disable -- Forces the APPN port into the "down" (inoperative) state.

Instructions: Select Disable to disable APPN routing over this port.

Select Enable to enable or reenable APPN routing over this port.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.2

Parameter: Port Address

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports**

Default: None

Options: None

Function: Specifies the interface address for this port.

Instructions: This is the MAC address, SDLC address, or DLCI and SAP address that you specified when you added the original circuit to the interface. A MAC address starts with the 0x prefix and ends with the SAP value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter:	**Local Link Station Role**
Path:	Configuration Manager > Protocols > APPN > Interfaces > **Ports**
Default:	Negotiable
Options:	Negotiable | Primary | Secondary
Function:	Specifies the initial role of the local network node when activating adjacent link stations through this port. *Negotiable* means that the local network node can be either primary or secondary and the actual role is determined during link activation. A link between the two nodes may require that one link station takes the role of *primary* link station and one link station takes the role of *secondary* link station.
Instructions:	Click on Values to display the options and select Negotiable, Primary, or Secondary.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.8

APPN/FR Port Configuration Parameters

The APPN/FR Port Configuration window (Figure A-9) allows you to configure the port that you want to add to the interface.

Note: If you are configuring SDLC, the SDLC Address parameter appears instead of the Port MAC Address parameter. If you are configuring frame relay on an LLC2 interface, the Port DLCI Address parameter appears.

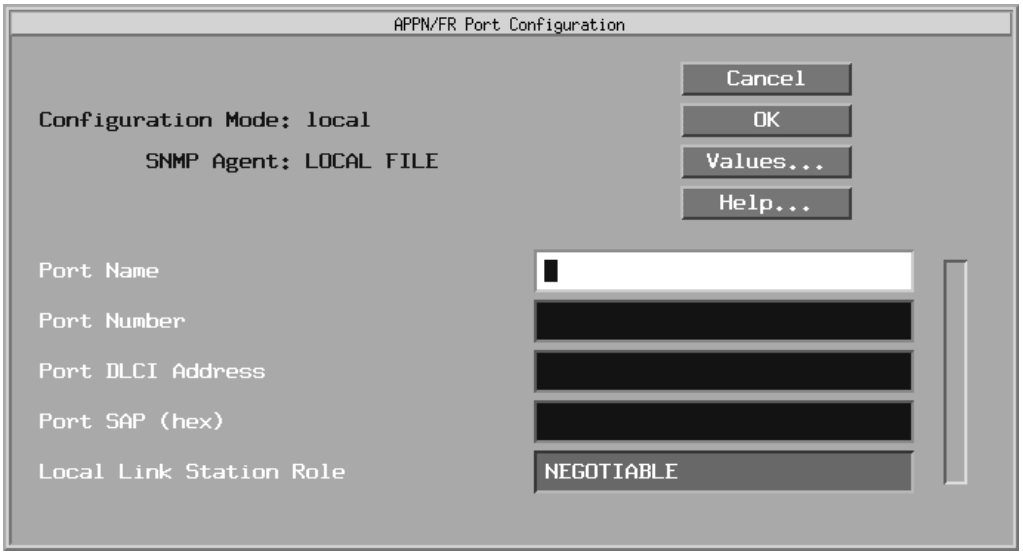

Figure A-9. APPN/FR Port Configuration Window

Parameter: Port Name

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Add**

Default: None

Options: Up to 8 alphanumeric uppercase characters

Function: Specifies the name of the newly added port.

Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.15

Parameter: Port Number

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Add**

Default: None

Options: Any unique 3-digit number

Function: Specifies a unique number to identify this port, if more than one port is configured on an interface.

Instructions: Enter any 3-digit value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.16

Parameter: Port DLCI Address

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Add**

Default: None

Options: Valid range changes based on the frame relay address length, as follows:

- If the address length is 2 bytes, the range is 16 to 1007
- If the address length is 3 bytes, the range is 1024 to 64511
- If the address length is 4 bytes, the range is 131072 to 8257535

Function: The DLCI is the frame relay PVC identification number. The frame relay network uses the DLCI to direct basic data flow.

Instructions: Enter a decimal number within the valid range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter: Port MAC Address

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Add**

Default: None

Options: Any unique 48-bit, 12-digit hexadecimal MAC-level address

Function: Specifies a unique MAC-level address, DLCI (for frame relay), or SDLC address.

Instructions: Enter a 12-digit MAC hexadecimal address in MSB noncanonical form (regardless of the media), a DLCI address, or an SDLC address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter: Port SAP

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Add**
Default: None
Options: Any unique SAP 2-digit hexadecimal value, usually 04
Function: Specifies a SAP address that lets multiple applications and protocol entities in a single computer share a MAC address.
Instructions: Enter a 2-digit hexadecimal value.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter: SDLC Address

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Add**
Default: None
Options: Any unique 2-digit hexadecimal SDLC-level address
Function: Specifies a unique SDLC address for this circuit.
Instructions: Enter a 2-digit hexadecimal address.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.38

Parameter: Local Link Station Role

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Add**
Default: Negotiable
Options: Negotiable | Primary | Secondary
Function: Specifies the initial role of the local network node when activating adjacent link stations through this port.

Negotiable means that the local network node can be either primary or secondary and the actual role is determined during link activation. A link between the two nodes may require one link station to take the role of *primary* link station and the other link station to take the role of *secondary* link station.

Instructions: Click on Values to display the options and select Negotiable, Primary, or Secondary.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.8

APPN Port Parameters

The APPN Port window (Figure A-10) allows you to customize attributes such as the maximum send and receive BTU size, link activation limits, and the local HPR service access point address for unnumbered information frames on this port.

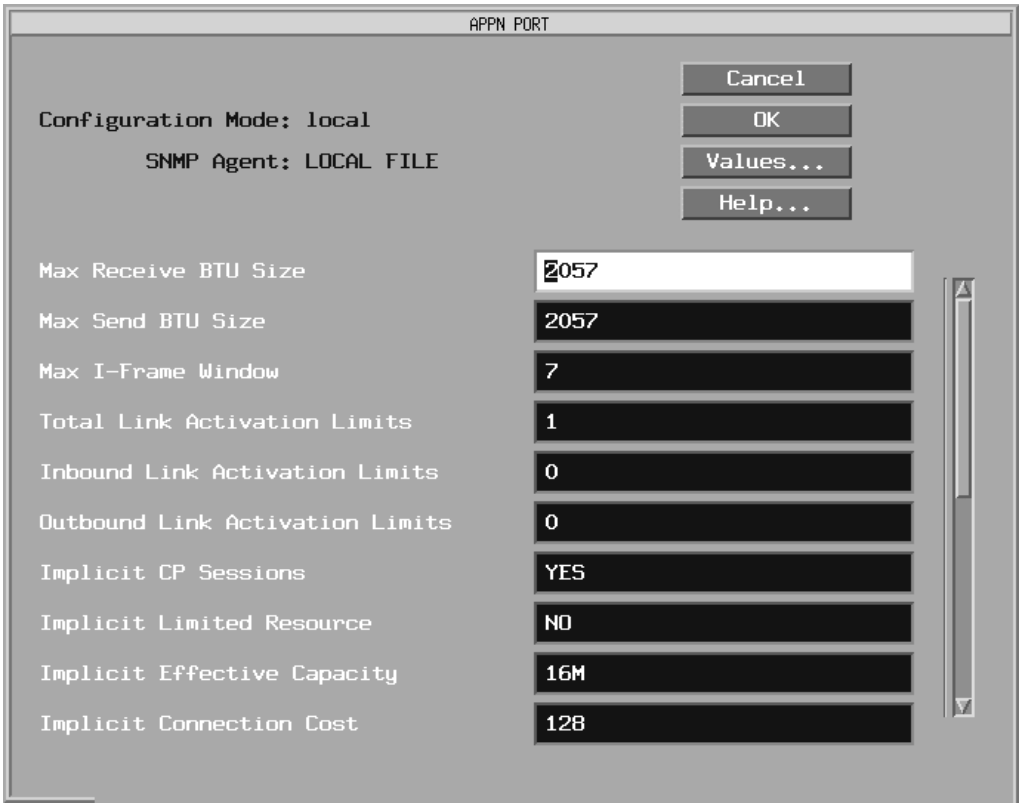

Figure A-10. APPN Port Window

Parameter: Max Receive BTU Size

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 1500

Options: 256 to 4105

Function: Specifies the maximum basic transmission unit (BTU) size that this network node can receive from any station. Each link station determines its own maximum BTU size based on local node definitions and exchange identification information received from the interface and the adjacent link station.

Instructions: Enter a number in the range 256 to 4105 that the node can handle. The minimum setting for HPR links is 768.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.9

Parameter: Max Send BTU Size

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 1500

Options: 256 to 4105

Function: Specifies the maximum basic transmission unit (BTU) size that can be sent over this port to any station. Each link station determines its own maximum send BTU size based on local node definitions and exchange identification information received from the interface and the adjacent link station.

Instructions: Enter a number in the range 256 to 4105. For Ethernet networks, the maximum send BTU size should be less than or equal to 1500. For synchronous media, the maximum send BTU size should be less than or equal to the synchronous maximum transmission unit. The minimum setting for HPR links is 768.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.24

Parameter: **Max I-Frame Window**

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 7

Options: 1 to 127

Function: Specifies the maximum number of information frames (I-frames) that the local network node can receive before it sends an acknowledgment.

Instructions: Enter a number in the range 1 to 127.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.10

Parameter: **Total Link Activation Limits**

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 1

Options: 0 to 256; see Table A-1 on page A-32

Function: Specifies the link activation limit for this port. The value is the maximum number of inbound and outbound link stations that the port will allow in this configuration. The maximum value depends on the setting of the Local Link Station Role parameter and the type of port, as listed in Table A-1 on page A-32.

Instructions: Specify a value in the range 0 to 256. The value must be greater than or equal to the combined settings for the Inbound Link Activation Limits and Outbound Link Activation Limits parameters.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.17

Parameter: **Inbound Link Activation Limits**

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 0

Options: 0 to 256; see Table A-1 on page A-32

Function: Specifies the inbound link activation limit for this port. The value is the maximum number of inbound link stations that the port will allow in this configuration.

Instructions: Specify a value in the range 0 to 256. This value plus the current setting for the Outbound Link Activation Limits parameter must be less than or equal to the current Total Link Activation Limits parameter setting.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.18

Parameter: **Outbound Link Activation Limits**

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 0

Options: 0 to 256; see Table A-1 on page A-32

Function: Specifies the maximum outbound link activation limit for this port. The value is the maximum number of outbound link stations that the port will allow in this configuration.

Instructions: Specify a value in the range 0 to 255. This value plus the current setting for the Inbound Link Activation Limits parameter must be less than or equal to the Total Link Activation Limits parameter setting.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.19

Table A-1. Link Activation Limit Default Values

Port Type	Local Link Station Role	Total Link Activation Limit	Inbound Link Activation Limits	Outbound Link Activation Limits
Leased	Secondary	1	1	0
Leased	Negotiable	1	0	0
Leased	Primary	256	0	256
SATF	Any	256(x+y)	128(x)	128(y)

Parameter: Implicit CP Sessions

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: Yes

Options: Yes | No

Function: Specifies whether CP-to-CP sessions are permitted for dynamic link stations. Dynamic link stations are link stations that are not defined on this port, but are activated by the adjacent node.

Instructions: Click on Values and select Yes or No.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.25

Parameter: Implicit Limited Resource

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: No

Options: Yes | No

Function: Specifies whether dynamic link stations on this port should be defined as limited resources. A *limited resource* link station deactivates after the number of sessions using the port drops to zero.

Instructions: Click on Values and select Yes or No.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.26

Parameter: Implicit Effective Capacity

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 16M

Options: 1200 | 2400 | 4800 | 7200 | 9600 | 14400 | 19200 | 48000 | 56000 | 64000 | 4M | 10M | 16M | Maximum

Function: The Effective Capacity is the highest bit-transmission rate that the TG can obtain before being considered overloaded. The link bandwidth and maximum load factor determine this value. TGs to dynamic link stations on this port use this value.

Instructions: Click on Values and select a number from the list.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.27

Parameter: Implicit Connection Cost

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the relative cost (per connect time) of using a TG to dynamic link stations on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. The cost per connect time typically is based on the applicable tariffs for the transmission facility this TG uses. An X.25 network, for example, may have a high connection cost for dynamic link stations.

Instructions: Enter a number in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.28

Parameter: Implicit Byte Cost

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the relative cost of transmitting a byte over this TG to a dynamic link station on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. An X.25 network, for example, may have a high byte cost for dynamic link stations.

Instructions: Enter a number in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.29

Parameter: Implicit Security

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: Nonsecure

Options: Nonsecure | Public-Switched | Underground | Conduit | Encrypted | Guarded Radiation | Maximum

Function: Specifies the security level of the TG to the dynamic link stations on this port.

Instructions: Click on Values and select one of the common definitions indicated under Options.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.30

Parameter: Implicit Delay

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: Negligible

Options: Negligible | Terrestrial | Packet | Long | Maximum

Function: Specifies the propagation delay, or the relative amount of time that it takes for a signal to travel the length of a TG to dynamic link stations on this port.

Instructions: Click on Values and select a common definition indicated under Options.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.31

Parameter: Implicit User-Defined 1

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the first user-defined TG characteristic to a dynamic link station on this port.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.32

Parameter: Implicit User-Defined 2

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the second user-defined TG characteristic to a dynamic link station on this port.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.33

Parameter: Implicit User-Defined 3

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the third user-defined TG characteristic to a dynamic link station on this port.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.34

Parameter: DLUR Implicit LS Support

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**
Default: Disable
Options: Enable | Disable
Function: Enables DLUR for implicit link stations on this port. This parameter is available when the DLUR Support Enable/Disable parameter is set to Enable.
Instructions: Click on Values and select Enable or Disable.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.40

Parameter: HPR Implicit LS Support

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**
Default: Enable
Options: Enable | Disable
Function: Enables HPR for implicit link stations on this port. This parameter is available when the HPR Support parameter is set to Enable.
Instructions: Click on Values and select Enable or Disable.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.35

Parameter: LLC Error Recovery Under HPR

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**
Default: Disable
Options: Enable | Disable
Function: Enables or disables LLC error recovery on implicit link stations on this port. This parameter is available when the global HPR Support parameter is set to Enable, and when the HPR Implicit LS Support parameter is set to Enable on this port.
Instructions: Click on Values and select Enable or Disable.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.36

Parameter: Implicit Link Deactivation Time

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: 120

Options: 5 to 255

Function: Specifies the time (in seconds) before implicit link stations on this port deactivate if it is an HPR limited resource. This parameter is available when the Implicit Limited Resource is set to Yes, and when the HPR Support and the HPR Implicit LS Support parameters are set to Enable.

Instructions: Enter a value in the range 5 to 255, inclusive.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.37

Parameter: HPR UI SAP

Path: Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**

Default: C8

Options: Any 2-digit hexadecimal value

Function: Specifies the local HPR service access point address for unnumbered information (UI) frames on this port. A UI frame is an LLC frame type on which LLC does not perform link-level error recovery. This parameter is available when HPR Support is set to Enable.

In base APPN/LLC2 configurations, LLC2 performs link-level recovery by sending information frames (I-frames). If you disable link-level error recovery with the HPR Link-Level Error Recovery parameter, APPN sends the HPR network layer packets as UI frames, since RTP performs the link-level error recovery on an end-to-end basis.

Instructions: Enter any 2-digit hexadecimal value. The 0x prefix is optional. For example, the value C8 uses the 0x prefix.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.3.1.39

Parameter:	**Implicit Uplink to EN**
Path:	Configuration Manager > Protocols > APPN > Interfaces > **Ports** > **Advanced**
Default:	Disable
Options:	Enable | Disable
Function:	Identifies (as uplinks or downlinks) all implicit link stations that an adjacent end node starts.
Instructions:	Select Enable to specify the implicit link to an EN as uplink. Select Disable to specify the implicit link to an EN as downlink.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.3.1.41

APPN Adjacent Link Station Parameters

The APPN Adjacent Link Station List window (Figure A-11) allows you to enable or disable adjacent link stations, edit the port name, adjacent node name, and node type, and specify whether the adjacent link station is a PU 2.0 node to be serviced by DLUR.

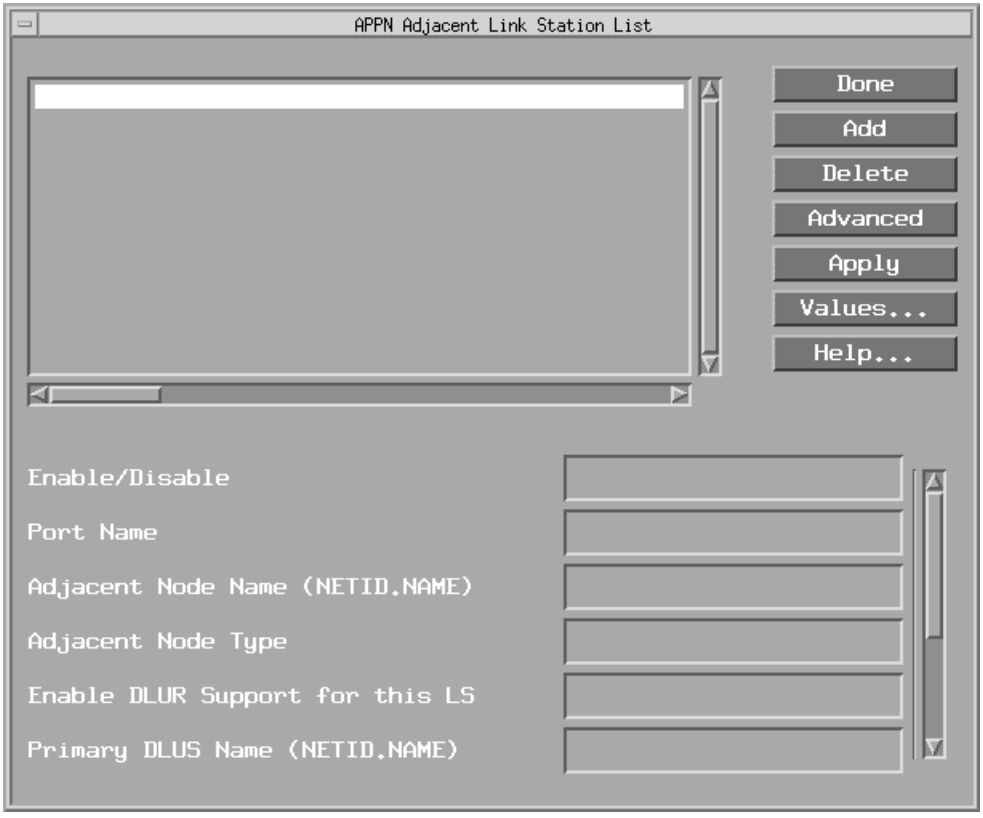

Figure A-11. APPN Adjacent Link Station List Window

Parameter: Enable/Disable

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: Enable

Options: Enable | Disable

Function: Enables or disables the adjacent link station highlighted in the APPN Adjacent Link Station List window.

Enable -- Initializes the selected adjacent link station. You can also use the Enable setting to initialize an existing adjacent link station port that you disabled earlier.

Disable -- Forces the adjacent link station into the “down” (inoperative) state.

Instructions: Click on Values and select Enable or Disable. Select Disable to disable the adjacent link station.

Select Enable to enable or reenable the adjacent link station.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.2

Parameter: Port Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: None

Options: Up to 8 alphanumeric uppercase characters

Function: Specifies the name of the port supporting the adjacent link station.

Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.4

Parameter: Adjacent Node Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: Identifies the name of the network and the adjacent node name.

Instructions: Type up to 8 characters for the network ID name, type a period, then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.CPONE is a valid entry for the Adjacent Node Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.6

Parameter: Adjacent Node Type

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: LEARN

Options: LEARN | NN | EN | BACK LEVEL LEN NODE | DSPU XID | DSPU NO XID

Function: Specifies the type of adjacent link station node.

Instructions: Click on Values and select an adjacent node type, as indicated under Options.

LEARN -- APPN automatically learns the type of adjacent link station.

NN -- Network Node

EN -- End Node

BACK LEVEL LEN NODE -- Back-level low-entry networking node.

DSPU XID -- Down stream physical unit (DSPU) node that supports XID3 protocols, but does not include the network name control vector.

DSPU NO XID -- Down stream physical unit (DSPU) node that does not support XID protocols. This selection is valid on nonswitched ports and is invalid on negotiable ports.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.23

Parameter: Enable DLUR Support for this LS

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: Disable

Options: Enable | Disable

Function: Specifies whether the adjacent link station is a PU2.0 node to be serviced by DLUR.

Instructions: Click on Values and select Enable or Disable.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.28

Parameter: Primary DLUS Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: Specifies the fully qualified name of the DLUS node that will serve the PU2.0 link station.

Instructions: Type up to 8 characters for the network ID name, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUS is a valid entry for this parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.30

Parameter: DSPU Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations
Default: None
Options: Up to 8 alphanumeric uppercase characters.
Function: Specifies the name of the down stream physical unit (DSPU) supported by DLUR.
Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded). The first character must be a letter.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.29

Parameter: Adjacent Node Block Number

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations
Default: None
Options: None
Function: A unique hexadecimal value that identifies APPN in this adjacent node. The number is the first 3 digits of the node ID.
Instructions: Accept the derived value that displays in this field.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.10

Parameter: Adjacent Node ID Number

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations
Default: None
Options: Optional; if specified, a valid string of 5 hexadecimal digits (0 to 9, A, B, C, D, E, F)
Function: Identifies the local APPN adjacent node and is present in APPN alerts and exchange identifications (XIDs). These 5 digits are combined with the 3-digit block number to form a unique XID node identification for the adjacent node. The APPN network node and the adjacent node exchange node identifications when establishing a connection.
Instructions: Enter 5 hexadecimal digits. To allow the XID to pass through the node, enter 00000.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.11

Parameter: Link Address (hex)

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: None

Options: None

Function: Specifies the MAC/SAP, DLCI/SAP (for frame relay), or SDLC address that this adjacent link station will use. This field displays the address you specified when you added the adjacent link station. The MAC address starts with the 0x prefix and ends with the SAP value.

Instructions: If you choose to specify a new link data address, specify the MAC address in MSB noncanonical format with the 0x prefix, and end the address with the SAP value. For frame relay, specify a valid DLCI and SAP value. For SDLC, specify a valid SDLC address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter: Max Send BTU Size

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: 1500

Options: 256 to 4105

Function: Specifies the maximum Basic Transmission Unit (BTU) size that can be sent over this TG to an adjacent link station. Each link station determines its own maximum send BTU size based on local node definitions and exchange identification (XID) information received from the interface and the adjacent link station.

Instructions: Enter a number in the range 256 to 4105. The minimum setting for HPR links is 768.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.14

Parameter: Target Pacing Count

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations
Default: 4
Options: 0 to 32767
Function: Specifies the pacing window size for session requests (BINDs) on this TG to the adjacent link station. APPN uses this value for fixed BIND pacing. Pacing windows control the number of session requests to prevent memory consumption at the adjacent link station.
Instructions: Enter a value in the range 0 to 32767.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.13

Parameter: HPR Support for this LS

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations
Default: Disable
Options: Enable | Disable
Function: Enables or disables HPR on this link station. This parameter is available when the HPR Support parameter is set to Enable.
Instructions: Click on Values and select Enable or Disable.
MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.32

Parameter: Branch Link Type

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations
Default: Uplink
Options: Uplink | Downlink
Function: Specifies whether the link station is an uplink or downlink.
Instructions: Select Uplink if you want the BrNN to present an EN image to the link station. Select downlink if you want the BrNN to present an NN image to the link station.

You must define at least one uplink adjacency to an NN. This NN will be the network node server for the BrNN.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.36

Parameter: Adjacent BrNN Support

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: Allowed

Options: Allowed | Required | Prohibited

Function: Specifies one of the following:

- Only BrNNs may connect to the adjacent link station (Required)
- BrNNs and other APPN node types may connect to the adjacent link station (Allowed)
- No BrNNs may connect to the adjacent link station (Prohibited)

Instructions: Click on Values and select one of the listed options.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.37

Parameter: Preferred NN Server

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations

Default: No

Options: No | Yes

Function: Specifies whether the selected adjacent link station will become the NNS when the link between the BrNN and its NNS becomes operational.

You can choose a node to be a preferred network node server when the following conditions are met:

- The Branch Link Type parameter on the APPN Adjacent Link Station List window is set to Uplink.
- The Adjacent BrNN Support parameter on the APPN Adjacent Link Station List window is set to either Allowed or Required.

Instructions: If you want an adjacent link station to be the NNS when a link that has gone down comes back up, click on Values and select Yes.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.38

Add APPN Adjacent Link Station Port Configuration Parameter

The APPN Adjacent Link Station Port Configuration window (Figure A-12) allows you to add a port that will support the adjacent link station.

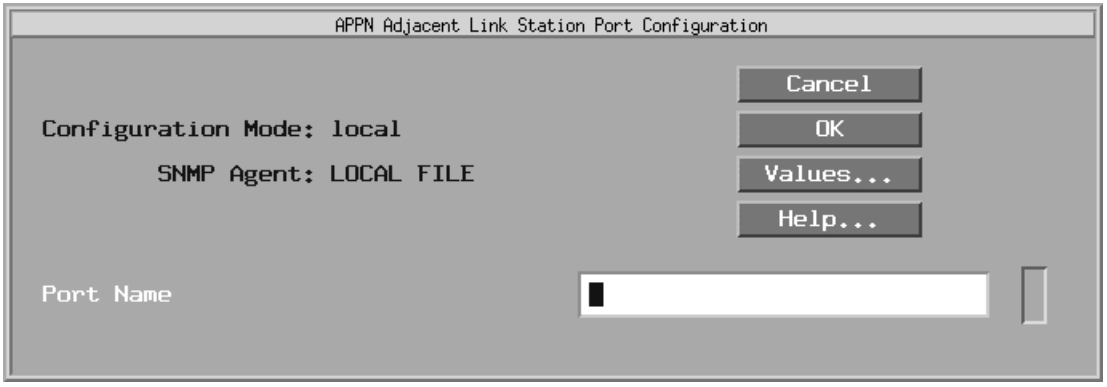

Figure A-12. APPN Adjacent Link Station Port Configuration Window

Parameter: Port Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add**

Default: None

Options: Up to 8 alphanumeric uppercase characters

Function: Specifies the name of the port supporting the adjacent link station.

Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.4

APPN/SDLC Adjacent Link Station Configuration Parameters

The APPN/SDLC Adjacent Link Station Configuration window (Figure A-13) allows you to specify an adjacent link station name and node name, specify a MAC address for the port that connects to the adjacent link station, and specify an SDLC address for this circuit.

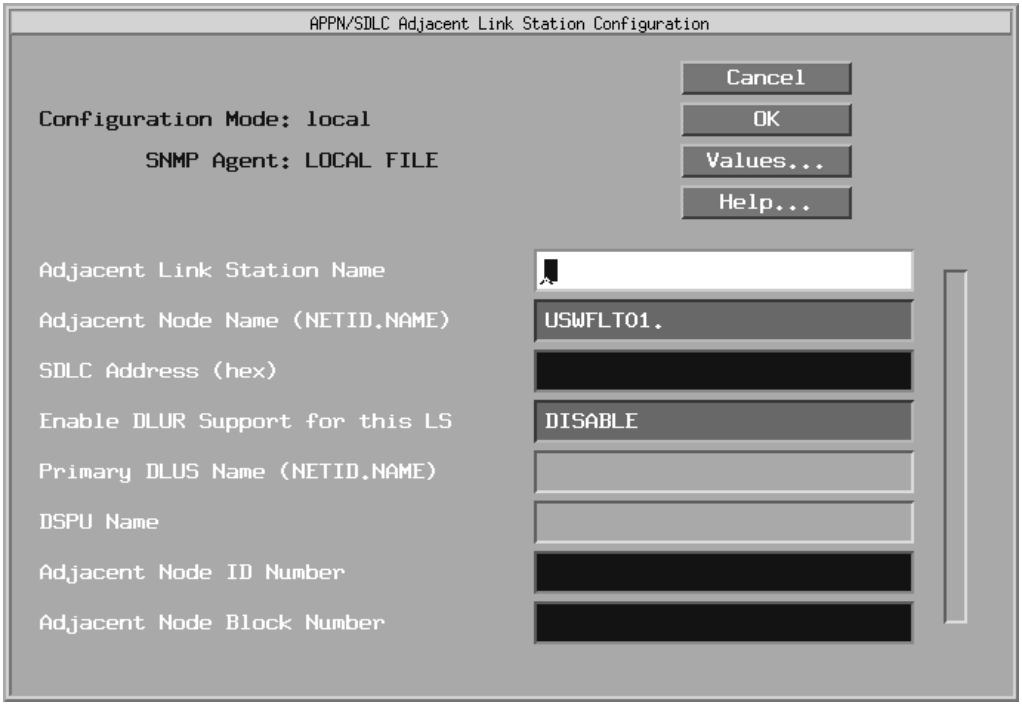

Figure A-13. APPN/SDLC Adjacent Link Station Configuration Window

Parameter: Adjacent Link Station Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Any name with up to 8 alphanumeric uppercase characters

Function: Specifies a unique name for the link station (control point) in the adjacent node. This name differentiates this link station from other defined link stations.

Instructions: Specify the link station name with up to 8 uppercase characters.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.3

Parameter: Adjacent Node Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: The Configuration Manager uses the local NETID for the NETID portion of this parameter. You can change the name if the adjacent node had a different NETID.

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: Identifies the user-specified name of the network and the adjacent node name.

Instructions: Type up to 8 characters for the network ID name, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.CPONE is a valid entry for this parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.6

Parameter: MAC Address

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Any unique 48-bit 12-digit hexadecimal MAC-level address

Function: Specifies a unique MAC-level address of the adjacent link station.

Instructions: Enter a 12-digit hexadecimal MAC-level address in MSB noncanonical format.

When you configure APPN on an Ethernet interface, you must obtain the "burned in" address of the adapter from the MIB and convert the address from canonical to noncanonical (MSB) format.

When you configure APPN on a token ring interface, use a Locally Administered Address (LAA). If an adapter is replaced, you will not have to reconfigure the address or any devices that reference the address. To configure the LAA for the token ring address, change the token ring parameter MAC Address Select to CNFG. Then, enter the address in the MAC Address Override field. For instructions, see *Configuring Ethernet, FDDI, and Token Ring Services*.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter: SAP

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Any unique SAP 2-digit hexadecimal value

Function: Specifies a SAP address that lets multiple applications and protocol entities in a single computer share a MAC address.

Instructions: Enter a 2-digit hexadecimal value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter: SDLC Address (hex)

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Any unique 2-digit hexadecimal SDLC-level address

Function: Specifies a unique SDLC address for this circuit.

Instructions: Enter a 2-digit hexadecimal address.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter: DLCI Address

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Valid range changes based on the frame relay address length, as follows:

- If the address length is 2 bytes, the range is 16 to 1007
- If the address length is 3 bytes, the range is 1024 to 64511
- If the address length is 4 bytes, the range is 131072 to 8257535

Function: This number is the PVC identification number that the frame relay network uses to direct data.

Instructions: Enter a decimal number within the valid range.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.27

Parameter: Enable DLUR Support for this LS

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: Disable

Options: Enable | Disable

Function: Specifies whether the adjacent link station is a PU 2.0 node to be serviced by (LU type 0, 1, 2, 3 and dependent LU 6.2) within APPN.

Instructions: Click on Values and select Enable or Disable.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.28

Parameter: Primary DLUS Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: Specifies the fully qualified name of the DLUS node that will serve the PU 2.0 link station.

Instructions: Type up to 8 characters for the network ID name, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUS is a valid entry for this parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.30

Parameter: DSPU Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Up to 8 alphanumeric uppercase characters.

Function: Specifies the name of the downstream physical unit (DSPU) supported by DLUR.

Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.29

Parameter: Adjacent Node ID Number

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: Optional; if specified, a valid string of 5 hexadecimal digits (0 to 9, A, B, C, D, E, F)

Function: Identifies the local APPN adjacent node and is present in APPN alerts and exchange identifications (XIDs). These 5 digits are combined with the 3-digit block number to form a unique XID node identification for the adjacent node. The APPN network node and the adjacent node exchange node identifications when establishing a connection.

Instructions: Enter 5 hexadecimal digits. To allow the XID to pass through the node, enter 00000.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.11

Parameter: Adjacent Node Block Number

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Add** > **OK**

Default: None

Options: None

Function: A unique hexadecimal value that identifies APPN in this adjacent node. The number is the first 3 digits of the node ID.

Instructions: Enter a hexadecimal value.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.10

APPN Adjacent Link Station Advanced Configuration Parameters

The APPN Adjacent Link Station Advanced Configuration window(Figure A-14) allows you to specify whether the adjacent link station is a limited resource, the number of the transmission group to this link station, and whether the link station supports CP-CP sessions.

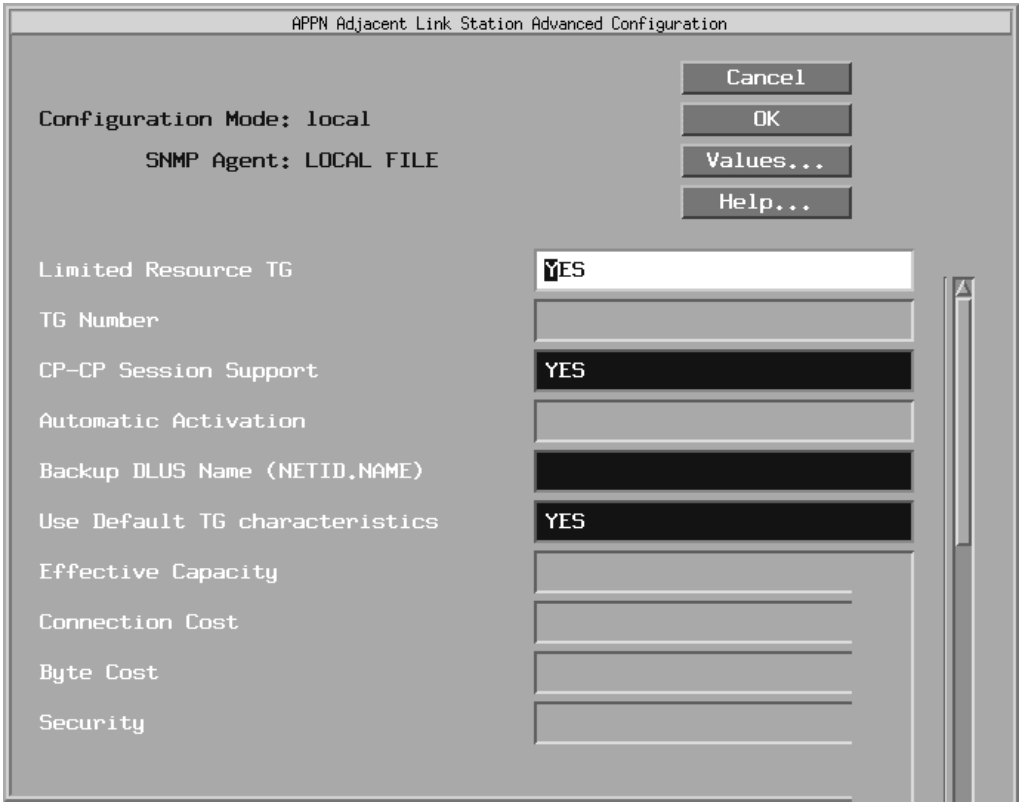

Figure A-14. APPN Adjacent Link Station Advanced Configuration Window

Parameter: Limited Resource TG

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: No

Options: Yes | No

Function: Specifies whether the adjacent link station is classified as a limited resource. If you specify Yes, the TG to the adjacent link station is deactivated when the number of active sessions drops to zero.

Instructions: Click on Values and specify Yes or No.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.8

Parameter: TG Number

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 1

Options: 1 to 20

Function: Specifies the number of the transmission group to this link station.

Instructions: Specify a number in the range 1 to 20.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.7

Parameter: CP-CP Session Support

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: Yes

Options: Yes | No

Function: Specifies whether the adjacent link station supports CP-CP sessions. APPN nodes (network nodes and end nodes) that support control points can communicate, register, and share network resources. Setting this parameter to No can reduce traffic across the TG.

Instructions: Click on Values and select Yes or No.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.12

Parameter: Automatic Activation

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: Disable

Options: Enable | Disable

Function: Specifies whether APPN automatically activates the link to the adjacent link station when a session is established.

Instructions: If the CP-CP Session Support parameter is set to Yes, then this parameter is not modifiable. Otherwise, specify Enable to automatically activate the link when there is a session to the adjacent link station.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.24

Parameter: Backup DLUS Name

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is the control point name with up to 8 characters. (Do not enter the angle brackets; these are a convention used to indicate a substitutable variable.)

Function: Specifies the fully qualified name of the DLUS node that serves as a backup to the PU2.0 link station.

Instructions: Type up to 8 characters for the network ID name; follow with a period; and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.DLUR is a valid entry for the Backup DLUS Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.31

Parameter: Use Default TG Characteristics

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: Yes

Options: Yes | No

Function: Specifies whether APPN uses default or configured TG characteristics on the port connecting the adjacent link station. The configurable TG characteristics are: Effective Capacity, Connection Cost, Byte Cost, Security, Delay, User 1, User 2, and User 3.

Instructions: Click on Values and specify Yes or No.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.26

Parameter: Effective Capacity

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 16M

Options: 1200 | 2400 | 4800 | 7200 | 9600 | 14400 | 19200 | 48000 | 56000 | 64000 | 4M | 10M | 16M | Maximum

Function: The effective capacity is the highest bit-transmission rate allowed on the TG to adjacent link stations on this port. The effective capacity is derived from the link bandwidth.

Instructions: Click on Values and select a number that reflects the link bandwidth.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.15

Parameter: Connection Cost

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the relative cost (per connect time) of using a TG to the adjacent link station on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. The cost per connect time is typically based on the applicable tariffs for the transmission facility that this TG uses.

Instructions: Enter a number in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.16

Parameter: Byte Cost

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 128

Options: 0 to 255 inclusive

Function: Specifies the relative cost of transmitting a byte over this TG to an adjacent link station on this port. A value of 0 indicates no cost, and a value of 255 indicates maximum cost.

Instructions: Enter a number in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.17

Parameter: Security

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: Nonsecure

Options: Nonsecure | Public-Switched | Underground | Conduit | Encrypted | Guarded Radiation | Maximum

Function: Specifies the security level of the TG to the adjacent link station on this port.

Instructions: Click on Values and select one of the common definitions indicated under Options.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.18

Parameter: Delay

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: Negligible

Options: Negligible | Terrestrial | Packet | Long | Maximum

Function: Indicates the propagation delay or the relative amount of time a signal takes to travel the length of a TG to the adjacent link station on this port.

Instructions: Click on Values and select one of the common definitions indicated under Options.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.19

Parameter: User-Defined 1

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the first user-defined TG characteristic using this link station.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.20

Parameter: User-Defined 2

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the second user-defined TG characteristic using this link station.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.21

Parameter: User-Defined 3

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the third user-defined TG characteristic using this link station.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.22

Parameter: LLC Error Recovery Under HPR

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: Disable

Options: Enable | Disable

Function: Enables or disables LLC error recovery on this link station. This parameter is available when the global HPR Support parameter is set to Enable, and when the HPR Support for this LS parameter is set to Enable on this link station.

Instructions: Click on Values and select Enable or Disable.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.33

Parameter: Link Deactivation

Path: Configuration Manager > Protocols > APPN > Adjacent Link Stations > **Advanced**

Default: 120

Options: 5 to 255

Function: Specifies the time (in seconds) before APPN deactivates this link station if it is an HPR limited resource. This parameter is available when the following parameters are set to Enable:

- HPR Support
- HPR Support for this LS
- Limited Resource

Instructions: Specify a value in the range 5 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.4.1.34

APPN Connection Network List Parameter

The APPN Connection Network List window (Figure A-15) allows you to enable or disable APPN routing on the selected connection network.

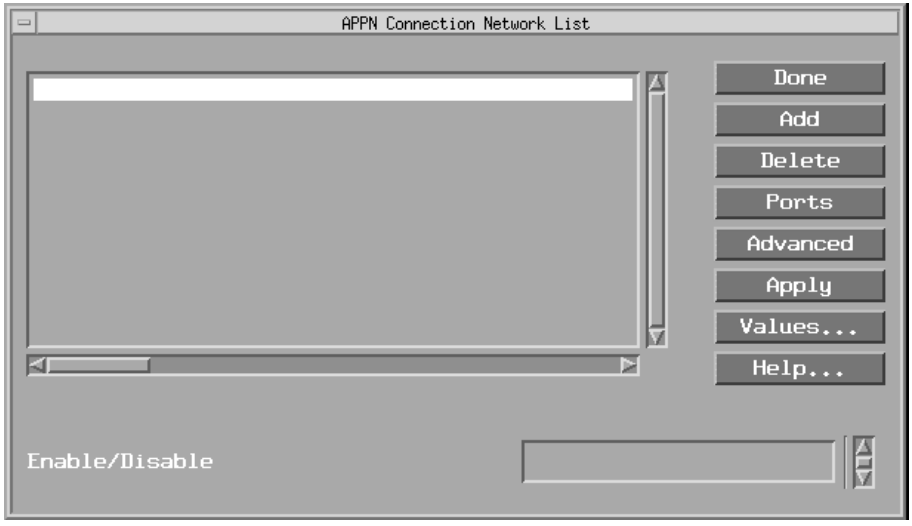

Figure A-15. APPN Connection Network List Window

Parameter: Enable/Disable

Path: Configuration Manager > Protocols > APPN > Connection Networks

Default: Enable

Options: Enable | Disable

Function: Enables or disables APPN routing on the selected connection network.

Enable -- Initializes routing on the selected APPN connection network. You can also use the Enable setting to initialize an existing connection network that you disabled earlier.

Disable -- Brings down routing on the APPN connection network.

Instructions: Select Disable only to disable APPN routing over this connection network.

Select Enable to enable or reenable APPN routing over this connection network.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.2

Connection Network Configuration Parameters

The Connection Network Configuration window (Figure A-16) allows you to add a connection network to an APPN configuration.

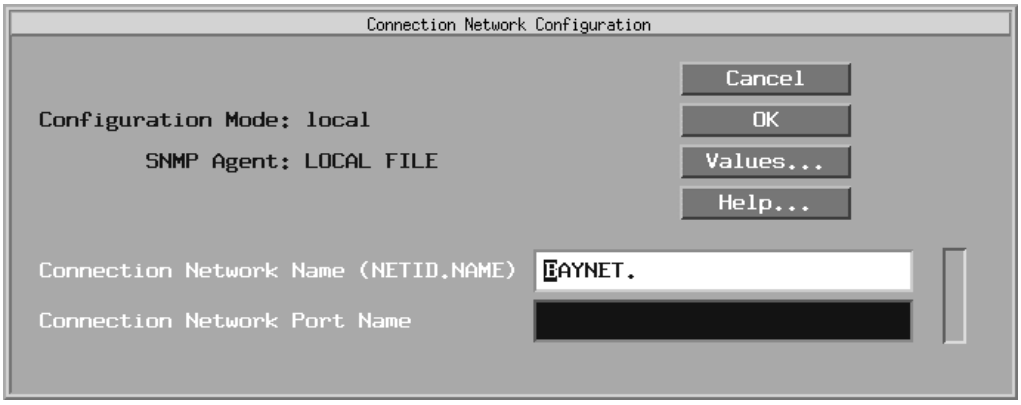

Figure A-16. Connection Network Configuration Window

Parameter: **Connection Network Name**

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Add**

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is any name with up to 8 characters. (Do not enter the angle brackets; these indicate a variable to be substituted.)

Function: The Connection Network Name parameter identifies the arbitrary user-specified name of the connection network. By default, the *NETID* portion of the network name is the previously configured Local Node Name parameter, as specified in the Edit APPN Global Parameters window (Figure A-5).

Instructions: Following the default *NETID* name and the period(.), enter a name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, APPNNODE.THREE is a valid entry for the Connection Network Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.3

Parameter: **Connection Network Port Name**

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Add**

Default: None

Options: Up to 8 alphanumeric uppercase characters

Function: Specifies the name of the port for the connection network.

Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.7.1.4

APPN Connection Network Port List Parameter

The APPN Connection Network Port List window (Figure A-17) allows you enable or disable connection networks ports, add and delete ports on existing connection networks, and edit advanced connection network parameters.

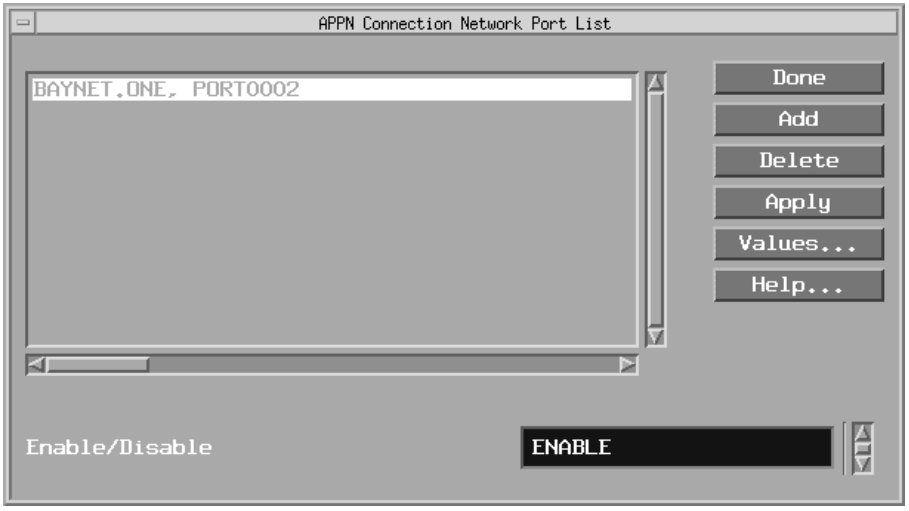

Figure A-17. APPN Connection Network Port List Window

Parameter:	**Enable/Disable**
Path:	Configuration Manager > Protocols > APPN > Connection Networks > **Ports**
Default:	Enable
Options:	Enable | Disable
Function:	Enables or disables APPN routing on this connection network port.
	Enable -- Initializes the selected APPN connection network port. You can also use the Enable setting to initialize an existing port that you disabled earlier.
	Disable -- Forces the APPN connection network port into the “down” (inoperative) state.
Instructions:	Select Disable to disable APPN routing over this connection network port.
	Select Enable to reenable APPN routing over this connection network port.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.1.7.1.2

Connection Network Port Configuration Parameter

The Connection Network Port Configuration window (Figure A-18) allows you to add a port to an APPN connection network.

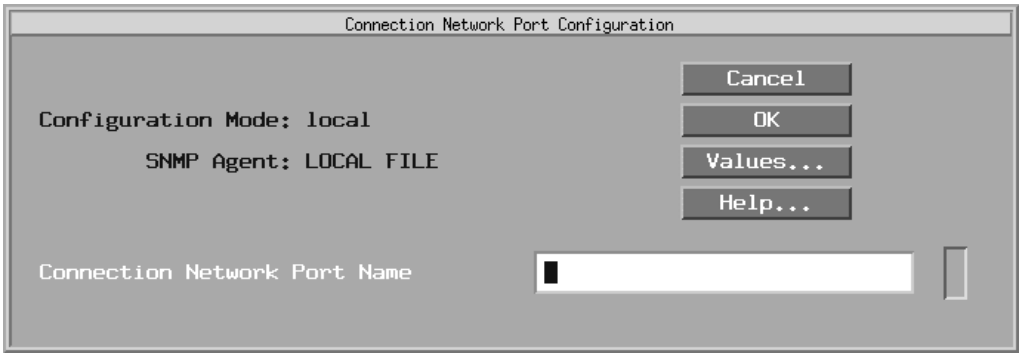

Figure A-18. Connection Network Port Configuration Window

Parameter: Connection Network Port Name

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Ports** > **Add**

Default: None

Options: Up to 8 alphanumeric uppercase characters

Function: Specifies the name of the new port for the connection network.

Instructions: Enter up to 8 alphanumeric uppercase characters with no blank spaces (leading, trailing, or embedded).

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.7.1.4

APPN Connection Network Advanced Parameters

The APPN Connection Network Advanced Parameters window (Figure A-19) allows you to specify the relative cost of using a connection network, the relative cost of transmitting a byte over the connection network, and the security level of the connection network.

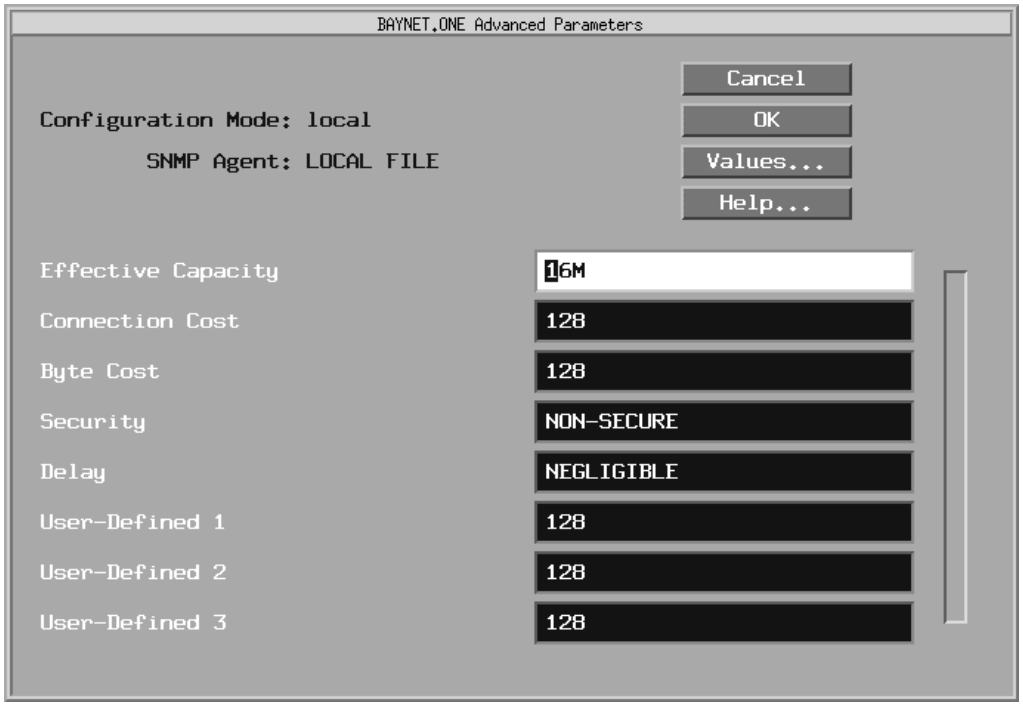

Figure A-19. APPN Connection Network Advanced Parameters Window

Parameter: Effective Capacity

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: 16M

Options: 1200 | 2400 | 4800 | 7200 | 9600 | 14400 | | 19200 | 48000 | 56000 | 64000 | 4M | 10M | 16M | Maximum

Function: Represents the highest bit transmission rate value allowed on connection network TGs over configured connection network ports. The effective capacity is derived from the link bandwidth.

Instructions: Click on Values and select a number that reflects the link bandwidth.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.5

Parameter: Connection Cost

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the relative cost (per connect time) of using a connection network TG over configured connection network ports. A value of 0 indicates no cost, and a value of 255 indicates maximum cost. The cost per connect time is typically based on the applicable tariffs for the transmission facility that this TG uses.

Instructions: Enter a number in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.6

Parameter: Byte Cost

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the relative cost of transmitting a byte over this connection network TG using configured connection network ports. A value of 0 indicates no cost, and a value of 255 indicates maximum cost.

Instructions: Enter a number in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.7

Parameter: Security

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: Nonsecure

Options: Nonsecure | Public-Switched | Underground | Conduit | Encrypted | Guarded Radiation | Maximum

Function: Specifies the security level of the connection network TG over configured connection network ports.

Instructions: Click on Values and select a definition from the Options list.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.8

Parameter: Delay

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: Negligible

Options: Negligible | Terrestrial | Packet | Long | Maximum

Function: Represents the propagation delay or the relative amount of time that a signal takes to travel the length of a connection network TG over configured connection network ports.

Instructions: Click on Values and select a definition from the Options list.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.9

Parameter: User-Defined 1

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the first user-defined TG characteristic for this connection network.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.10

Parameter: **User-Defined 2**

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the second user-defined TG characteristic for this connection network.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.11

Parameter: **User-Defined 3**

Path: Configuration Manager > Protocols > APPN > Connection Networks > **Advanced**

Default: 128

Options: 0 to 255

Function: Specifies the third user-defined TG characteristic for this connection network.

Instructions: Enter a value in the range 0 to 255.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.1.6.1.12

APPN Directory Entry List Parameters

The APPN Directory Entry List window (Figure A-20) allows you to enable and disable APPN directory services on an LU, specify the type of resource for the directory services entry, and specify the name and node type of the parent.

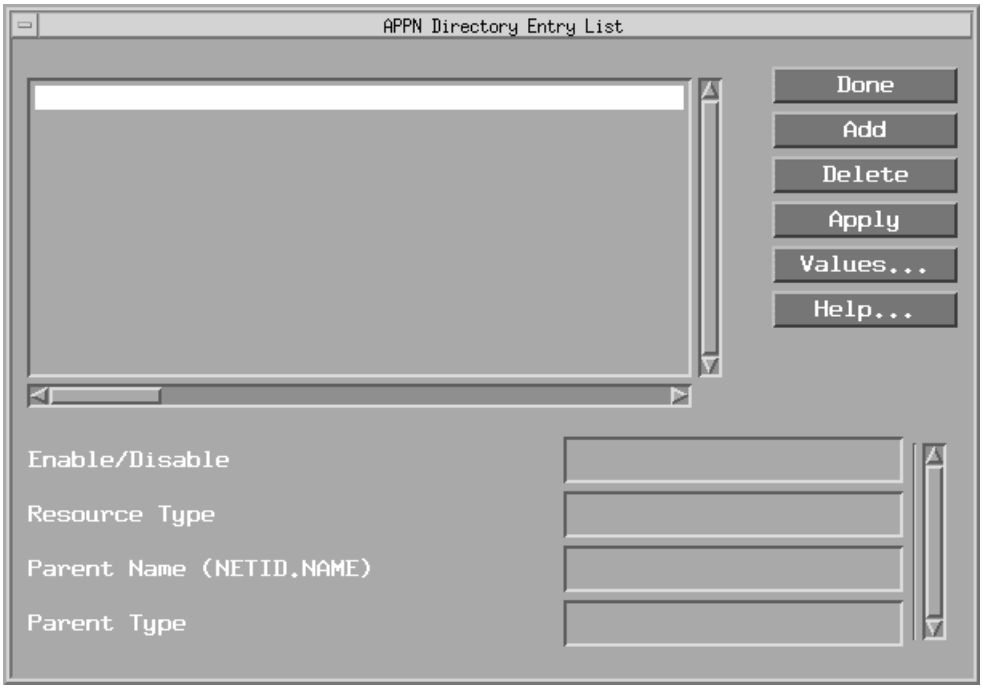

Figure A-20. APPN Directory Entry List Window

Parameter: Enable/Disable

Path: Configuration Manager > Protocols > APPN > Directory Entries

Default: Enable

Options: Enable | Disable

Function: Enables or disables APPN directory services on the selected LU name.

Instructions: Select Disable only to disable APPN directory services on this LU.

Select Enable to enable or reenable APPN directory services on this LU.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.4.3.1.2

Parameter: Resource Type

Path: Configuration Manager > Protocols > APPN > Directory Entries

Default: LU (logical unit)

Options: LU (logical unit) | ENCP (end node control point) | NNCP (network node control point) | Wildcard (*)

Function: Specifies the type of resource for this directory services entry. When you set this parameter to LU, the local directory services database contains pointers to the CP name of the node owning the LU and the CP name of the network node server.

Instructions: Click on Values and select LU, ENCP, NNCP or Wildcard (*). Specify Wildcard to instruct APPN that the entry uses the asterisk (*) wildcard. Refer to “Adding APPN Directory Entries” on page 3-5 for information on using the wildcard with directory entries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.4.3.1.4

Parameter: Parent Name

Path: Configuration Manager > Protocols > APPN > Directory Entries

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is any name with up to 8 characters. (Do not enter the angle brackets; these indicate a variable to be substituted.)

Function: Specifies the fully qualified APPN node name *<NETID>.<NAME>* that owns the selected LU name from the list. By default, the *NETID* portion of the parent name is the previously configured Local Node Name parameter, as specified on the Edit APPN Global Parameters window (Figure A-5).

Instructions: Type up to 8 characters for the network ID name, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Parent Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.4.3.1.5

Parameter:	**Parent Type**
Path:	Configuration Manager > Protocols > APPN > Directory Entries
Default:	ENCP (End Node Control Point)
Options:	NNCP (Network Node Control Point) | ENCP (End Node Control Point)
Function:	Specifies the node type of the parent, either an APPN EN or NN.
Instructions:	Click on Values and specify NNCP or ENCP.
MIB Object ID:	1.3.6.1.4.1.18.3.5.14.4.3.1.6

Directory Entry Configuration Parameters

The Directory Entry Configuration window (Figure A-21) allows you to add a qualified LU name to the directory services list.

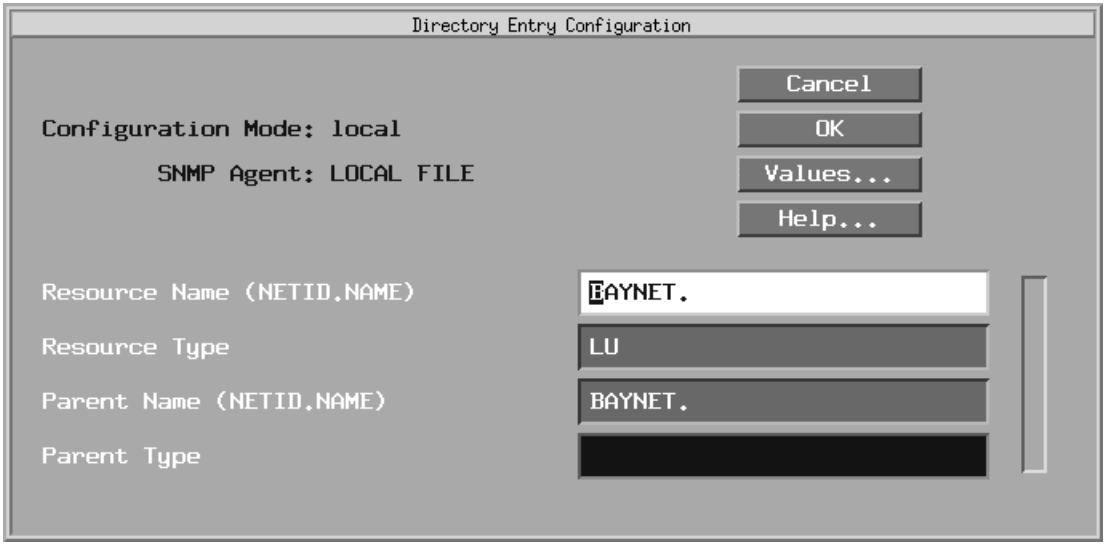

Figure A-21. Directory Entry Configuration Window

Parameter: Resource Name

Path: Configuration Manager > Protocols > APPN > Directory Entries > **Add**

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is any name with up to 8 characters. (Do not enter the angle brackets; these indicate a variable to be substituted.)

Function: Specifies the fully qualified name (*<NETID>.<NAME>*) of the resource to be added to the local directory. By default, the *NETID* portion of the name is the previously configured Local Node Name parameter, as specified on the Edit APPN Global Parameters window (Figure A-5).

Instructions: Type up to 8 characters for the network ID name, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Parent Name parameter.

Use the asterisk (*) wildcard to indicate a wildcard entry. Refer to "Adding APPN Directory Entries" on page 3-5 for information on using the wildcard with directory entries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.4.3.1.3

Parameter: Resource Type

Path: Configuration Manager > Protocols > APPN > Directory Entries > **Add**

Default: LU (logical unit)

Options: LU (logical unit) | ENCP (end node control point) | NNCP (network node control point) | Wildcard (*)

Function: Specifies the type of resource for this directory services entry. When you set this parameter to LU, the local directory services database contains pointers to the CP name of the node owning the LU and the CP name of the network node server.

Instructions: Click on Values and select LU, ENCP, NNCP or Wildcard (*). Specify Wildcard to instruct APPN that the entry uses the asterisk (*) wildcard. Refer to "Adding APPN Directory Entries" on page 3-5 for information on using the wildcard with directory entries.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.4.3.1.4

Parameter: Parent Name

Path: Configuration Manager > Protocols > APPN > Directory Entries > **Add**

Default: None

Options: Any valid name with up to 17 alphanumeric uppercase characters in the format *<NETID>.<NAME>*; *NETID* is the unique network name with up to 8 characters followed by a period, and *NAME* is any name with up to 8 characters. (Do not enter the angle brackets; these indicate a variable to be substituted.)

Function: Specifies the fully qualified APPN node name (*<NETID>.<NAME>*) that owns the resource being defined. By default, the *NETID* portion of the name is the previously configured Local Node Name parameter, as specified on the Edit APPN Global Parameters window (Figure A-5).

Instructions: Type up to 8 characters for the network ID name, type a period, and then type a control point name with up to 8 characters. You must use uppercase characters only and the first character must be non-numeric. Blank spaces (leading, trailing, and embedded) are not allowed in the node name. For example, NETWORKA.SYSTEMA is a valid entry for the Parent Name parameter.

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.4.3.1.5

Parameter: Parent Type

Path: Configuration Manager > Protocols > APPN > Directory Entries > **Add**

Default: ENCP (End Node Control Point)

Options: NNCP (Network Node Control Point) | ENCP (End Node Control Point)

Function: Specifies the parent node type owning this resource, either an APPN EN or NN.

Instructions: Click on Values and specify NNCP or ENCP

MIB Object ID: 1.3.6.1.4.1.18.3.5.14.4.3.1.6

Appendix B
APPN Base and Optional Function Sets

This appendix gives the base and optional APPN function sets that Nortel Networks supports on routers configured as APPN network nodes.

Table B-1. APPN Base Function Sets

Function Set Number	Description
001	LEN-level XID3
002	All XID3 States
003	Link Station Role Negotiation
006	CP Name on XID3
007	TG Number Negotiation
008	Multiple TGs
010	Single-Link TG
011	LFSID Addressing
013	Priority Queuing for Transmission
020	Extended BIND and UNBIND
021	Adaptive Pacing for Independent LU BINDs
023	BIND Segmenting and Reassembly
024	Adaptive Pacing for Dependent LU BINDs
030	CP-CP Sessions
031	CP Capabilities Exchange
033	FQPCID Generation
034	CD-Initiate
035	Reconstruct CD-Initiate Reply
036	COS/TPF

(continued)

Table B-1. APPN Base Function Sets *(continued)*

Function Set Number	Description
037	BIND (ILU = PLU)
038	Limited Resource
039	BIND without RSCV from Any LEN or APPN Node
040	Propagate Unrecognized CVs
041	Session RU Segmenting and Reassembly
042	Interleaved Segments
050	Register EN Resources
051	Locate/Find/Found
052	Reconstruct GDS Variables for Locate Reply and CD-Initiate Reply
053	Participate in Network Searches
054	Send Wildcard Reply
055	Broadcast and Directed Searches
056	ENCP Search Control
057	Partial Directory Entries
059	Accept Unqualified LU Name
060	Locate Chains/Locate (keep)
061	Sending Locate to a Gateway
062	Cache Resource Locations
063	Favor Explicit Replies
064	Network Qualified LU Name
065	Central Directory Client
066	Abbreviated Resource Hierarchy
068	Authentic Net ID Indicators
069	DS Support for Domain LEN Resources
070	Process Local Resource Change
073	Initial Topology Exchange
074	Flow Reduction Sequence Numbers
075	Resource Sequence Numbers
076	Topology Broadcast
077	Garbage Collection
078	Topology Isolation at Net ID Boundaries
079	Build RSCV
080	Calculate Route Using Connection Networks
081	Class-of-Service Manager
082	Route Randomization

(continued)

Table B-1. APPN Base Function Sets *(continued)*

Function Set Number	Description
083	Member of Connection Network
084	Select One-Hop Routes
085	Select Network Routes
090	Common Node Operator Command Set (This is a product-specific function set)
091	Network Node Operator Command Set (This is a product-specific function set)
100	Extend/Unextend BIND and UNBIND
101	Fixed Session Level Pacing
102	Adaptive Session Level Pacing
103	Intermediate Session Segmenting/Reassembly
104	Routing BIND and UNBIND
105	Intermediate Session Routing for Dependent LU Sessions
106	Intermediate Session Routing for Independent LU Sessions
Management Services - Multiple Domain Support (MDS) Function Set	
150	SNA/MS MDS Common Base
152	SNA/MS MDS Network Node Support
153	SNA/MS MDS High Performance Option
154	SNA/MS MDS Transport Confirmation Option
Management Services - Entry Point Alert Function Set	
170	SNA/MS EP Alert Base Subset
171	SNA/MS Problem Diagnosis Data in Alert (Optional)
177	SNA/MS LAN Alert (Optional)
178	SNA/MS SDLC/LAN LLC Alert (Optional)
1001	Secondary-Initiated Non-Activation XID
1004	Adjacent Node Name-Change
1013	Interoperability with Peripheral Border Node
1103	Retry Referred Search
1104	Topology-Based Directory Non-Verify
1105	PCID Modifier
1109	Surrogate Owner

Table B-2. APPN Optional Function Sets

Function Set Number	Description
1002	Adjacent Link Station Name
1007	Parallel TGs
1011	Multiple Local LUs, Session Manager for Local Independent LU 6.2, and Intranode Routing
1012	LU Name = CP Name
1018	Delete EN Resources Before Registering
1121	Optimized Peer-to-Peer Communication
1067	Dependent LU Requester
1107	Central Resource Registration (of LUs)
1200	Tree Caching and TG Caching
1301	Nonpaced Intermediate Session Traffic
1400	High Performance Routing
1401	RTP Tower
1402	Control Flows over RTP Tower

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